STEEL

PRODUCTION

PROCESSING

DISTRIBUTION

USE

EDITORIAL STAFF
E. L. SHANER
EDITOR

ASSOCIATE EDITORS
E. C. BARRINGER — E. F. ROSS
A. J. HAIN — J. D. KNOX
G. H. MANLOVE — A. H. ALLEN
E. A. FRANCE JR. — GUY HUBBARD

New York
E. C. KREUTZBERG — B. K. PRICE
L. E. BROWNE

Pittsburgh — W. G. GUDE
Chicago — F. B. PLETCHER
Washington — L. M. LAMM
London — VINCENT DELPORT

BUSINESS STAFF
GEORGE O. HAYS
BUSINESS MANAGER

New York
E. C. KREUTZBERG — E. W. KREUTZBERG

Pittsburgh
S. H. JASPER

Chicago
L. C. PELOTT — C. A. WARDLEY

Cleveland
JOHN HENRY — R. C. JAENKE

CONTENTS

May 9, 1932

THE WEEK IN STEEL 13

American Foundrymen Face New Conditions Resolutely 15
Credit Fiat Bill Would Put Steel Prices on 1926 Level 17
Steel Corporation Personnel Changes Near 18
Business Faithful to Napoleonic Era 18
New England Takes Offensive with New Products, New Uses 19
Revision of Antitrust Laws Is Urged 20
April Steel Ingot Rate Lowest Since July, 1921 20
April Pig Iron Total Lowest Since Figures Compiled 21
Industrial Men in the Day's News 22
Obituary 23
Here and There in Industry 24
Mirrors of Motordom 25
Financial News of the Steel Industry 54

EDITORIAL—Congress Major Obstacle to Reconstruction 26
What Price Taxes?—By S. W. Utley 27
THE BUSINESS TREND 28

Utilizing the Heat in Coke by Dry Quenching 31
Large Diameter Corrugated Pipe of Multi-Plate Design 34
Engineers in Agreement on Ductility in Weld Metal 36
Designer Predicts Radically Different Age of Steel 38
Old Blast Furnace Produced Iron for Napoleonic Wars 39
Making the Most of Steel 41
Progress in Steelmaking 42
Scanning the Technology of Steel 44
New Equipment 45

MARKET REPORTS AND PRICES 47-66
CONSTRUCTION AND ENTERPRISE 68
WHERE-TO-BUY DEPARTMENT 69
ADVERTISERS' INDEX 85

STEEL is published every Monday by PENTON PUBLISHING CO., Penton Building, Cleveland, O. C. J. STARK, President; J. D. PEASE, Vice President; F. V. COLE, Secretary. Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association. Branch Offices: New York, 220 Broadway; Chicago, Peoples Gas building; Pittsburgh, Oliver building; San Francisco, Alto building; Washington, National Press building; Cincinnati, Schmidt building; London, Caxton House, Westminster, S. W. 1; Berlin, Lichterfeld-West, Dahlmerstrasse 64a, Germany. Subscription in the United States, Cuba and Mexico $6 per year; in Canada $8.60; in Great Britain and European countries £2:8s.

Entered as second class matter at post office at Cleveland under the Act of March 3, 1879.

Copyright 1932 by the Penton Publishing Co.

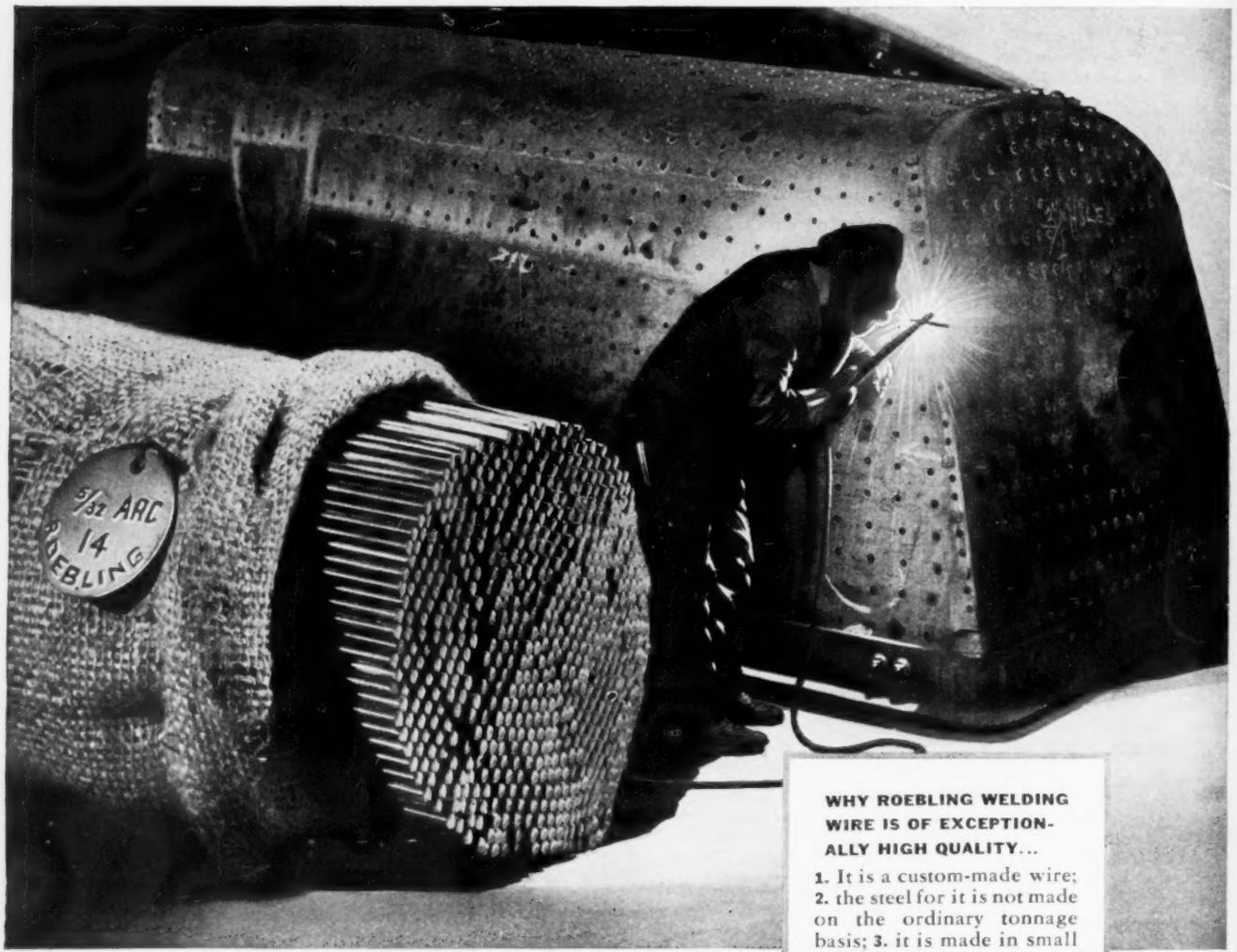
TO MEET *exacting* WELD REQUIREMENTS

In railway shop work as illustrated, in shipbuilding and building construction, and for a wide variety of fabricating and maintenance jobs —where welds must be of utmost dependability —Roebling Welding Wire is widely used.

The method of making this fine wire is special throughout—from the open-hearth process clear through to the final operation. As a result, it is absolutely uniform in quality and free of non-metallic impurities—and greatly aids in the production of tough, strong welds.

Why not write for samples of Roebling Welding Wire and test its qualities? It is made for both gas and electric welding, in a variety of analyses. Our nearest office is at your service.

JOHN A. ROEBLING'S SONS CO. - TRENTON, N. J.
Atlanta Boston Chicago Cleveland Los Angeles New York Philadelphia Portland, Ore. San Francisco Seattle Export Dept, New York, N. Y.



WHY ROEBLING WELDING WIRE IS OF EXCEPTIONALLY HIGH QUALITY...

1. It is a custom-made wire; 2. the steel for it is not made on the ordinary tonnage basis; 3. it is made in small open-hearth furnaces; 4. of special melting stock; 5. and is produced by Roebling's special methods; 6. painstaking care is exercised throughout manufacture.

ROEBLING

THE CUSTOM-MADE WELDING WIRE—FOR EXACTING WELDERS

Volume 90 Number 19

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

INDUSTRY again has its head up! After almost three years of an irresolute rear-guard action it appears to have reached its Marne, and there, encouraged by returning confidence in finance, energized by the disastrous financial showing of the first quarter, dumbfounded by the demoralization of congress, it is counter attacking. True, there is an element of desperation, the blind chance of nothing to lose and everything to gain; yet, an unrelated subconscious conviction that the depression can be beaten by an offensive and now is the time is permeating industry. . . . In New England a renascence of the sturdy Pilgrim spirit prompts a campaign (p. 19) to develop new products and new uses for old products. . . . At Birmingham an important factor in the chemical industry is expanding (p. 18), not at the expense of competitors but by pushing back the horizon of its present lines. . . . A large electrical interest at Pittsburgh (p. 19) has enlisted its entire personnel of 35,000, from president down, as a shock sales battalion in May, each employe to sell at least one item.

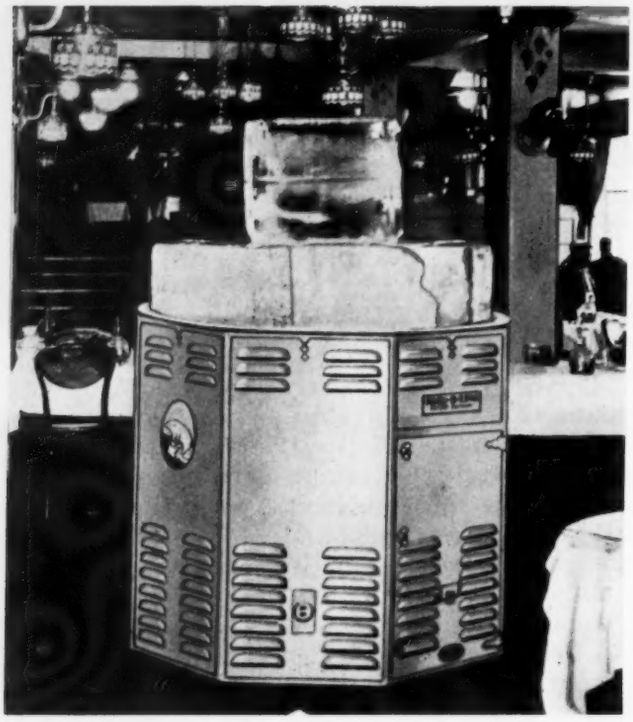
Visit Wrath on Congress, Banks, Imports

This spirit of revolt, first loosed against the shadowy menace termed economic depression, is spreading to include congress. Vital as shop practice and costs now are, the American Foundrymen's association in convention last week at Detroit (p. 27) listened avidly to a past president's denunciation of the failure of congress to economize and to legislate wisely, and his call to action. . . . With equal candor the president of the Institute of Scrap Iron and Steel charges New England banks with much of the responsibility (p. 61) for unduly depressed scrap prices in that region. . . . Nor is there any softening of the wrath against foreign steel. An eastern structural fabricator declares (p. 18) he will shut up shop before using imported material; the Concrete Reinforcing Steel institute has made a case against unmarked foreign bars (p. 18) and after June 15 all imports must indicate their parentage. . . . New complaints (p. 17) of dumping of pig iron and hoops have been filed. . . . Industry indeed is on the march!

New Steels for New Era

If the past is a dependable guide, this march will lead to a new prosperity, for which new steels will be required. According to an industrial designer (p. 38), these steels will largely be alloys—some already known and others to be developed for specific purposes—and beauty will be achieved by the use of color and combinations of rough and polished surfaces. . . .

The Skull Cracker: One of 25 oil paintings of industrial subjects by Garrit A. Beneker, recently on exhibition at the Museum of Science and Industry, New York



A motor in this steel cabinet pulls air down through the ice, forces it out into the room, lowers temperature 15-20 degrees, states the Columbian Steel Tank Co., Kansas City, Mo.

More steel in the home appears to be one specification of the new era, and a survey (p. 19) by an electrical manufacturer discloses 29,000,000 of the 30,000,000 homes in the United States without an electric stove, 21,000,000 lacking an electric vacuum cleaner.

Will Napoleonic Cycle Be Repeated?

Again falling back upon the past, this new prosperity is now in the embryo, provided the parallel with the Napoleonic era is faithful (p. 18). Between the trend of business from 1818 to 1834 and from 1920 to 1932 the similarity is uncanny, and extending the comparison, industry is now in the first stages of a rise to a new peak about 1936. . . . In the Scottish highlands ruins of a two-century old blast furnace, believed to have supplied iron for munitions in the Napoleonic wars, were discovered recently (p. 39). Blowing engines apparently were driven by a water wheel; fuel was obtained from nearby charcoal pits.

Double Bottom for Pig Iron Rate

It also requires an historical comparison to obtain a true perspective on current production of pig iron. With a total of only 855,734 gross tons in April (p. 21), the previous low—of July 1921—yielded as the nadir. The April daily rate of 28,524 tons, however, did not quite break through the low rate of July, 1921. Only 59 of the country's 297 blast furnaces were active April 30. . . . Demand for pig iron continues to drag (p. 57) even though lake furnaces which are sources of supply for automotive foundries note better releases.

Low-Price Trio Lifts Auto Output

For finished steel, also, automotive requirements are expanding, and May assemblies of cars and trucks will be the largest in at least eight months. Gossip at Detroit has it that there shortly will be two more entries in the low-price field (p. 25), Ford output of the new eights is approaching 1000 daily, low-pressure balloon tire makers are talking of the day when tires will do so much cushioning that springs and shock absorbers will be unnecessary. . . . Use of machine gas welding in the manufacture of tubing for automobiles, especially for driveshafts, is increasing, engineers at the American Welding society convention discussed (p. 36), with strength, ductility, speed claimed as advantages.

Foundrymen Fight with Better Methods

More intelligent management, intensive research for a better product and broader application, improved foundry practice—these are the weapons with which the American Foundrymen's association (pp. 15-16) is combatting the depression. . . . A similar display of initiative by a Middle West steelmaker has resulted in larger diameter and stronger corrugated pipe for drainage service of a multi-plate type (p. 34), segments being rolled from heavier plates, corrugated and galvanized, and shipped nested. . . . A French blast furnace reports (p. 31) a saving of 4.17 per cent in fuel consumption by the use of by-product coke that is dry-quenched.

Steel Again Climbs Out of Valley

This week, like last, steel production is averaging 24 per cent (p. 55), buoying the hope that a recovery from the extreme low of April is under way. . . . Steel ingot output in April (p. 20), at 47,685 gross tons, was the lowest since July, 1921; the same comparison holds for pig iron (p. 21), which in April declined to 28,524 tons. . . . No small credit for maintaining production at 24 per cent is due Detroit mills (p. 47), operating on automotive releases. . . . Structural steel inquiry is extremely broad (p. 52), headed by a prospective 150,000 tons for the San Francisco-Oakland bridge. . . . With the Steel corporation reducing wages and salaries 15 per cent May 16, probably setting the pace for the industry (p. 18), further pressure on prices is threatened.

American Foundrymen Face New Conditions Resolutely

AMERICAN foundrymen are fighting a dual battle and doing it well. On one side they are meeting the challenge of the depression with weapons of more intelligent management. On the other hand they are facing the threat of competitive processes and materials. Here the defense is an offense which is bringing into full play the artillery of intensive research for improved castings, better foundry practice and broader application of product.

The earnestness with which this fight is being waged was reflected throughout the sessions of the thirty-sixth annual convention of the American Foundrymen's association, held last week in Hotel Statler, Detroit. Co-operating with the A. F. A. were the Gray Iron, Malleable Iron Research, and Materials Handling institutes; Foundry Equipment Manufacturers; Electric Hoist Manufacturers; and Detroit Foundrymen's associations; and the materials handling and management divisions of the American Society of Mechanical Engineers.

Expenditures Not Curbed

Outstanding in the proceedings were the interest and close attention displayed in the discussion of foundry practice, the renewed emphasis placed upon problems of management and particularly cost accounting, and finally the increasing and very emphatic resentment of foundrymen against the failure of congress to curb expenditures.

The rising tide of disgust with the attitude of politicians in local and federal government found able expression in an address on Wednesday by S. W. Utley, who without mincing words showed clearly the menace to industry which lies in the present behavior of congress. As a result of his remarks, which are presented in abstract on page 27, the A. F. A. on Thursday passed a resolution calling upon congress to begin to economize.

Mr. Utley's address was presented at a luncheon meeting of the Foundry Equipment Manufacturers' association, at which President H. S. Simpson, National Engineering Co., Chicago, presided. William H. McFadden, past president of A.F.A., fresh from a visit to Washington, discussed briefly several aspects of the problem of federal economy.

In a brief address at the opening session on Tuesday, E. H. Ballard, General Electric Co., West Lynn, Mass., president of the A. F. A., declared that he believes that the trend of work taken away from the castings industry by competitive processes has turned and that through application of modern foundry principles and dissemination of accurate data on foundry products much of that work is being won back to castings shops.

In a brief business session Thursday, the William H. McFadden gold medal was presented by G. H. Clamer, Ajax Metal Co., Philadelphia, to H. W. Gillette, Battelle Memorial institute, Columbus, O. Past President R. A. Bull announced that the John A. Penton gold medal, awarded to the late LaVerne W. Spring shortly before his death, had been presented to Mrs. Spring. New officers, as shown in the accompanying roster, were elected and installed, and Retiring President Ballard was unanimously elected an honorary member of the association.

Sessions Run Overtime

Three scheduled sessions for Tuesday on steel foundry practice developed into an almost continuous discussion lasting from 10:30 a. m. until 6 p. m. John Howe Hall, Taylor-Wharton Iron & Steel Co., High Bridge, N. J., presided at the morning meeting. In the absence of the authors, F. Melmoth, Detroit Steel Casting Co. presented a paper on the development of manganese steels in Australia by D. Clark and J. Coutts, Newcastle, N. S. W.

In commenting on this paper Chairman Hall declared that alloy steels now have taken the place once filled exclusively by manganese steel. He stated that the change of silicon and manganese in the ladle, referred to by the authors, can be prevented by a magnesite or chrome brick lining.

In his opinion, internal chills do not represent good practice. He believes the acetylene torch is a fairly efficient method for removing risers. Mention of chills later in the day precipitated a discussion of internal and external chills in connection with carbon and alloy steels. Many steel foundrymen seem to consider internal chills necessary evils,

A large party of foundrymen visited the plant of the Great Lakes Steel Corp., a division of the National Steel Corp., at Ecorse, Mich., on Monday afternoon. These views were taken upon arrival at the plant

but many agreed that when properly designed and well cleaned before they are placed in the molds, they can be used without evil results. E. H. Ballard, General Electric Co., West Lynn, Mass., declared that internal chills are indispensable in certain castings. He advocates sandblasting the chills and then coating them with water glass.

C. H. Herty Jr., director of research and C. F. Cristopher and M. W. Lightner, research engineers, Metallurgical Advisory board, Carnegie Institute of Technology, Pittsburgh, presented an exhaustive paper on the cleanliness of steel castings. Dr. Herty explained that in producing steel of uniform cleanliness and good physical properties it is necessary to be careful not only in the choice of deoxidizers but also of the preparation of the heat for deoxidization. A good action in the bath during the refining period and a slag of proper viscosity are necessary in either basic or acid practice.

T. Holland Nelson, Philadelphia, described the manufacture and application of stainless steels. Compositions vary to a wide extent and care must be taken to specify the proper analysis for each purpose.

R. A. Bull, Electric Steel Founders Research group, Chicago, F. Melmoth; and George Batty, director, Steel Castings Development Bureau, Philadelphia, cited their experience on the relative fluidity of basic and acid steel melted in electric furnaces. Mr. Bull favors the basic process while Mr. Melmoth is partisan to acid practice. The argument brought forth the curious admission that risers in basic steel foundries are smaller than those in shops where the acid process is employed.

Enterprise Made to Count

Design of steel castings from the foundryman's viewpoint was the theme of the shop course. Chairman R. A. Bull declared that in recent years the welding industry has diverted a considerable volume of business that formerly went to the foundries. Part of this was inevitable but in many cases the change was the result of the enterprise of the welders and the inertia of the foundrymen. He suggested that foundrymen confer with engineers and in many cases advise modifications in design.

Cleaning of steel castings was discussed at the steel shop course on Wednesday, under the leadership of P. E. McKinney. In explaining cleaning with the sandblast, P. E. Potter, Pangborn Corp., Hagerstown, Md., recommended 60 pounds air pressure for sand and 80 pounds for metallic abrasives. The size of the nozzle should be governed by the type of work to be cleaned. Fifteen to 17 inches is the most effective distance for the nozzle from the work and an angle of 45 degrees is best for general blasting, in his opinion.

Inspection Is Discussed

Inspection of castings in the green, or previous to annealing, was discussed. H. A. Forsberg, Continental Roll & Steel Foundry Co., East Chicago, Ind., stated that cleaning castings before annealing is an economical move, especially in the case of large work. This is true where a local inspector is employed, but does not apply to the same extent where a foreign inspector is required.

Important accomplishments of the Gray Iron institute under the group plan adopted in 1931 were outlined at a luncheon session Tuesday by President A. E. Hageboeck, Frank Foundries Corp., Moline, Ill. A. C. Ziebell, Universal Foundry Co., Oshkosh, Wis. explained how the plan works in the Milwaukee district. The standard sales agreement has been widely adopted there; test bars are submitted, tested and appraised among group members; and costs in method and detailed comparison are studied.

Chairman Hageboeck urged members to use care in investigating the credit status of new accounts. W. W. Kerlin, institute metallurgist, described the work of the central office in improving practice, in stimulating interest toward developing new specifications and in furthering the plan of adopting different classes of iron for specific services. A. J. Tuscany, institute manager, outlined the manner in which the organization has continued and even amplified its service despite a reduced budget.

A joint conference of the institute and the A.F.A. was led by A. E. Grover, cost director of the institute immediately following the luncheon. Mr. Grover presented a study of the six common methods used by foundries to determine costs. These methods differed mainly in the plan of burden distribution.

The several sessions on gray iron foundry practice were well attended, as were the shop courses on cupola melting, operation and control. As in past conventions, the detailed discussion of fundamentals in these courses held the attention of foundrymen far beyond the scheduled hours.

Group activities of the Malleable Iron Research institute were discussed at a luncheon meeting Wednesday. Prof. Enrique Touceda, consulting engineer, hinted at new results of investigations and laboratory work and H. W. Highriter outlined co-operative research projects now in progress.

Malleable Shows Increase

Robert E. Belt, institute secretary, stated that the standard form of data which should be supplied when estimates are requested has been approved by the iron and steel committee of the National Association of Purchasing Agents and will now go before its members for approval. He declared that the turn in malleable production occurred in November; each month since then has shown a gain. According to a recent estimate, the automobile industry in 1931 used 210,000 tons of malleable castings, or 54 per cent of the total output. This is an average of 176 pounds of malleable per car.

The M-M-M congress—management, materials and maintenance—opened Wednesday with J. B. Webb, Jervis B. Webb Co., Detroit, presiding and M. W. Potts, Alvey Ferguson Co., New York, chairman. A paper on management policies in a gray iron foundry, prepared by W. G. Reichert, Singer Mfg. Co., Elizabethport, N. J., was read by G. E. Hagemann. Maintenance of equipment under the difficult conditions obtaining in foundries was discussed by T. A. Bissell, *Maintenance Engineering*, New York.

C. R. Weiss, Link-Belt Co., Indianapolis, reported an investigation on the wear of metals due to abrasion. The study covered heat treated and untreated steels, case hardened steels, malleable, gray iron and several bronzes. Several written discussions brought out the contention that the study shows wear resistance increases with brinell hardness of the materials.

Dan M. Avey, *The Foundry*, Cleveland, presided at a joint materials handling session of A. F. A. and A. S. M. E. Application of monorail

New Officers

AMERICAN FOUNDRYMEN'S ASSOCIATION

President

T. S. HAMMOND
President, Whiting Corp., Harvey, Ill.

Vice President

FRANK J. LANAHAN
President, Fort Pitt Malleable Iron Co., Pittsburgh

Directors

Three-Year Terms

E. H. BALLARD
General foundry and pattern shop superintendent, General Electric Co., West Lynn, Mass.

H. BORNSTEIN
Director, testing and research laboratories, Deere & Co., Moline, Ill.

S. B. CUTHBERT
Superintendent of foundries, Edgar Thomson Works, Carnegie Steel Co., Braddock, Pa.

DAVID EVANS
President, Chicago Steel Foundry Co., Chicago

FRANKLIN G. SMITH
President, Osborn Mfg. Co., Cleveland

systems in foundries was discussed by J. B. Forker, Osborn Mfg. Co., Cleveland, who outlined nine rules to observe in planning handling equipment of this type. He stressed simplicity and flexibility.

A symposium on waste elimination was the high light of an A. S. M. E. management session Thursday. Chairman W. E. Roe, W. F. & John Barnes Co., Detroit, described a campaign by which Oakland Motor Car Co. received 3500 suggestions from workmen of which 700 resulted in a saving of $250,000. Later other suggestions of the remaining 2800 were adopted with a further saving of $250,000. Total cost was $15,000. E. S. Carman, Edwin S. Carman, Inc., Cleveland, cited several instances of good waste elimination efforts resulting in economies ranging from $10,000 to $99,000.

G. E. Hagemann, Alexander Hamilton institute, New York, presided at a materials handling session of A. S. M. E. F. A. Smythe, Thew Shovel Co., Lorain, O., reported on performance standards of locomotive and crawler type cranes and shovels. W. E. Farrell, Easton Car & Construction Co., Easton, Pa., discussed the capacity of containers and G. L. Morehead, Link-Belt Co., reported on nomenclature and classification of materials handling equipment.

John Carmody, *Factory and Industrial Management*, New York, presided at the final management session of A. S. M. E. The study of markets and its effect on product design, and international trade were discussed.

PROTECTED FROM OLD MAN RIVER: When the Southern Gas & Fuel Co. recently buried a 16-inch natural gas line in the levee just above New Orleans it took precautions against flood conditions. When the Mississippi river rises, as it does periodically, the line will be under practically the same conditions as if it were on the bed of the river. Hence 1800-pound river clamps were used every 30 feet to anchor the line. The line, all steel, was welded by the shielded arc process of the Lincoln Electric Co., Cleveland. E. O. McGehee, of the Southern company, was general superintendent of the job; S. L. Guynn supervised the arc welding

Credit Fiat Bill Would Put Steel Prices on 1926 Level

WASHINGTON — Prices of iron and steel would be advanced sharply, in the case of scrap almost tripled, were the Goldsborough bill to be enacted and the federal reserve board able to accomplish its aim—the re-establishment of 1926 commodity levels.

"Utterly impossible without controlling production and distribution," is the declaration of Eugene Meyer, governor of the board, but there is a growing sentiment in both houses of congress that drastic measures are required to restore prices.

The Goldsborough bill, minus its revolutionary feature for raising and lowering the price of gold, declares it to be the policy of the United States to restore and maintain the average purchasing power of the dollar, as ascertained by the department of labor wholesale commodity index for 1921-1929 inclusive.

This would be accomplished by the federal reserve board "by the control of the volume of credit and currency." This objective, the board maintains, is now being sought through open market purchases of government securities at the rate of $100,000,000 weekly.

While chances of passage of the bill are believed remote, the following are illustrations of the difference between current prices on typical iron and steel products and the average for 1921-1929, which happens to be substantially the 1926 level:

	Current Price	1926 Aver.
Bars, Pittsburgh	1.60c	2.00c
Shapes, Pittsburgh	1.60c	1.95c
Plates, Pittsburgh	1.60c	1.90c
Rail steel bars, Chicago	1.55c	2.00c
No. 24 gal. sheets, Pitts.	2.85c	4.30c
Tie plates, Chicago	1.85c	2.30c
Billets, Pittsburgh	$27.00	$35.00
Malleable iron, Valley	$15.50	$19.00
No. 2 foundry iron, Chi.	$16.00	$21.65
Heavy melt. steel, Pitts.	$10.00	$17.15
No. 1 railroad wrought, Chicago	$ 5.25	$14.10

□ □ □

Just prior to reporting the tax bill back to the senate, the senate finance committee rejected the modified 1 per cent manufacturers' sales tax, thereby indicating that barring an unexpected overturn no sales tax will be enacted at this session of congress.

Senate finance committee revisions include doubling the normal income tax rate, with an increase in surtaxes to a maximum of 55 per cent, and increases in second-class postage rates. The bill will include the 3-cent first-class postage rates proposed by the house and an adjustment of a tax on telegraph, radio and cable messages.

□ □ □

Preliminary study of the imports of pig iron has been ordered by the customs bureau, and if this inquiry indicates dumping an investigation of selling practices abroad will be initiated. This inquiry follows complaints from the chamber of commerce of Port Henry, N. Y., which is headquarters of Witherbee, Sherman & Co., that England and Holland are dumping pig iron in the United States.

In March, imports of pig iron included 12,718 gross tons from Holland and 200 tons from the United Kingdom. Some cast iron pipe foundries in New Jersey have been heavy buyers of foreign iron recently.

A complaint charging dumping of iron and steel hoops from England, France, Belgium and Holland also has been filed.

□ □ □

Import quotas for importation into France of automobile body sheets have been increased for the period to June 30 according to the department of commerce.

The decision fixes the global quota

on polished flat sheets of iron or steel for automobile bodies for the period April 1 to June 30 at 692.9 metric tons, of which the quota for imports from the United States is 240 metric tons.

The original quotas were fixed on March 19 for the period March 1 to June 30 at 200 metric tons per month for total imports, and at 60 metric tons for imports from this country.

□ □ □

Interstate commerce commission has started an investigation of all salaries of $10,000 and over paid by the railroads.

□ □ □

Democratic tariff bill is before President Hoover. All indications are that he will veto it and it will be impossible to pass it over his veto.

Rules Alien Bars Must Be Marked

CHICAGO—Under a ruling by the United States tariff commission, upon petition from the Concrete Reinforcing Steel institute, Chicago, it is set forth that concrete reinforcing bars imported into this country after about June 15 must be marked with the full name of the country of origin in legible English, such marking to be as prominent as possible.

The ruling provides that foreign producers are expected to identify their bars through cutting the full name of the country of origin into the rolls in a manner similar to the American mill marking system. Such action will make difficult the substitution of foreign steel in place of domestic bars, and therefore is expected to discourage misrepresentation.

Hits Use of Foreign Steel

Philadelphia—"It is a patriotic duty to refuse to buy a pound of imported steel," said W. Nelson Mayhew, president, Montgomery Iron & Steel Co. and head of the local structural steel board of trade.

"Personally, I would rather go out of business than use it, even though many well-known firms are now doing so, more or less under cover."

Books Navy Yard Shafting

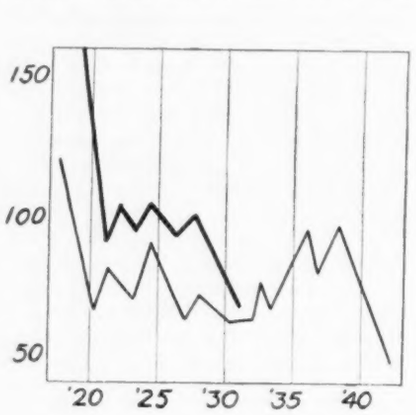
Boston—Franklin Machine Co., Providence, R. I., has booked 10,600 pounds of class A steel shafting for the Portsmouth navy yard for $2590.50, delivered.

Business Faithful To Napoleonic Era

MAJOR swings in commodity prices from 1920 to 1932, shown by the heavy line in the chart below, have followed the trends in the light line, representing the swings from 1818 to 1843, following the Napoleonic wars.

"The forecast of 100 years ago is startling in its accuracy," says *Looking Ahead*, published by Alvan T. Simonds and John G. Thompson, Simonds Saw & Steel Co., Fitchburg, Mass., from which the chart is reproduced.

"Will it continue to be correct for the next 13 years? It forecasts prices rising slowly in 1932, then



sharply for the most of 1933, followed by a decline of about a year to the middle of 1934; then a sharp rise for nearly three years to the end of 1936, followed by a sharp decline of about a year. It forecasts business lows in 1934 and in 1937, and another very severe depression beginning about 1940."

For the heavy line 100 is the average monthly wholesale commodity price for 1923-25. The lines are said to be strictly comparable only for time and direction.

Swann Chemical Sees Time Propitious for Expanding

New sales offices are being opened in five large cities and sales representatives are being put in ten others by the Swann Corp., Birmingham, Ala., holding company for the Swann Chemical Co., Anniston, Ala.; Provident Chemical Works, St. Louis; Iliff-Bruff Chemical Co., Hoopeston, Ill., and Wilckes, Martin, Wilckes Co., Camden, N. J.

This expansion follows a survey of the chemical market, which disclosed new uses for old products and indicated a means for enlarging the corporation's business without detracting from competitors. Says Theodore Swann, president: "We are convinced that this is a favorable time to expand our business."

Largest German Tin Mill Purchases Pack Furnace

Surface Combustion Corp., Toledo, O., recently sold to the Wissen plant of the Vereinigte Stahlwerke A. G., largest tin plate mill in Germany, a continuous-type walking-beam pack furnace to be fired with coke oven gas. The announcement of this purchase, supplied to STEEL and presented on page 19 of the May 2 issue, incorrectly referred to this furnace as a normalizer. The unit is a sheet pack furnace and will be the first to be installed in Europe.

Corp. Personnel Changes Are Near

NEW YORK—Important shifts in higher executives of the United States Steel Corp. are expected between now and July 1. Decisions are believed to have been made prior to the sailing, ten days ago of Myron C. Taylor, chairman of the board, for Europe.

A. T. DeForest, president of the Columbia Steel Co., San Francisco, is expected to retire. He has been in charge of the Corporation's activities on the Pacific coast since 1911. His successor, it is understood, will be Ambrose N. Diehl, made vice president of the Corporation in New York in August, 1930, and prior to that vice president of the Carnegie Steel Co. at Pittsburgh.

The retirement of T. W. Robinson as vice president of the Illinois Steel Co., Chicago, early in June may be the occasion for a rearrangement of personnel of that subsidiary. Formal announcement of these and other important changes is expected shortly.

Steel Corp. Reduces Wages And Salaries 15 Per Cent

New York—United States Steel Corp. announced May 6 that effective May 16 it will reduce salaries and wages 15 per cent in the more important districts and "in other locations to rates reflecting equable differentials."

It is presumed that other steel producers will follow this lead. The hope is expressed, also, that this adjustment will be the forerunner of a pe-

riod of wage stabilization in basic industries, with easing bank credits and a resultant general revival of business.

Effective Oct. 1, 1931, common labor rates were reduced approximately 10 per cent by the Corporation, the first reduction since August, 1923. From this date to Oct. 1, 1931, the hourly rate was 44 cents. The cut last October carried the rate back to about 39½ cents, and the further adustment as of May 16 will lower it to about 36 cents. Comparisons with wartime and prewar rates are difficult because of the shorter work day introduced since.

Salaried employes of the Corporation have taken salary adustments up to 15 per cent, in addition to recent staggered hours and monthly layoffs which were part of a program to save 10 per cent in the aggregate.

In 1931 the total payroll of the Corporation was $266,871,413. The salary and wage reductions were not effective until late in the year, hence the full effect did not show up in the 1931 report.

What's Happening In Business World

SUPPLYING these wants would bring business back: Of the 30,000,000 dwellings in the United States, 29,000,000 have no electric stove and no oil burner, 27,000,000 have no electric refrigerator, 24,000,000 have no electric fan or percolator, 22,000,000 have no electric washing machine and 21,000,000 have no vacuum cleaner, according to the General Electric Co.

□ □ □

A porcelain enameled metal house, meeting the requirements of the small family, will be exhibited at the Century of Progress exposition at Chicago in 1933 by the American Rolling Mill Co., Middletown, O., and Ferro Enamel Corp., Cleveland.

Pipe Rates Unreasonable

Washington—Interstate commerce commission has found that rates on wrought iron and steel pipe, in carloads, from Chicago to Dodge City, Kans., are unreasonable, and has awarded reparation. The case was that of the W. A. L. Thompson Co. against the Santa Fe railroad.

Navy Buys Chrome Sheets

Philadelphia—Naval aircraft factory has awarded 5000 pounds of chrome molybdenum steel sheets to the Crucible Steel Co. of America for 8.525c, delivered.

New England Takes Offensive With New Products, New Uses

BOSTON—Courageous and determined efforts to develop new business in the face of depression conditions—and efforts that are producing results—were described at the New England Council's New Products Conference here May 4. Nearly 200 New England business executives, meeting here at the Council's invitation, told how they had used research to develop new products and to discover new uses for old products.

Simultaneously some 76 New England firms under auspices of the Council exhibited to the Boston market new products ranging from fruit drinks to bathroom fixtures, including many in the metalworking field.

"The world in general is far behind the research engineer," declared James W. Hook, chairman of the industrial committee of the Council and president of the Geometric Tool Co., New Haven, Conn. "He has shown it how to live on a higher plane.

"What is really needed in this mechanized world is a new and vigorous school of thought that will teach us how to live with lower and lower costs and greater and greater production—a leadership that will show us how to distribute the things that are produced so quickly and so equitably that the standard of living of all the people will be increased."

Among New England firms exhibiting at this ne wproducts conference were: Boston Gear Works Sales Co., North Quincy, Mass.; Bridgeport Hardware Mfg. Co., Bridgeport, Conn.; Cooper Oven Themometer Co., Pequabuck, Conn.; Granite State Mowing Machine Co., Hinsdale, N. H.; Mossberg Pressed Steel Corp., Attleboro, Mass.; Rivett Lathe & Grinder Corp., Brighton, Mass.; Standard Sanitary Mfg. Co., Boston; Submarine Signal Co., Boston; and Trumbull Electric Mfg. Co., Plainville, Conn.

Time To Counter Attack Depression—Westinghouse

WE ARE tired of being on the defensive so we are launching a bold counter attack," declared H. C. Thomas, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., announcing a campaign whereby each of the 35,000 Westinghouse employes undertakes to sell one or more Westinghouse appliances in May.

"The folly of 1929 and the desperation of 1931 were the two extremes, both bad. We are going to fight back to a middle ground of common sense. Team play and a rebirth of good old American courage are going to carry us to the goal we have set ourselves.

"We will bring in orders that will start fresh activity, not only in our plants but in the hundreds of other industries from which we buy materials."

Sheet and Tin Plate Mill Wages Reduced

Wage rates in sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers are reduced 3 per cent for May and June. This is due to the fact average sales price of Nos. 26, 27 and 28 gage black sheets was 2.30c per pound in March and April, compared with 2.40c in January and February. The reduction is the first change in the wage rates since September-October, 1931.

The new rates are 4½ per cent above base. Following is a comparison of price averages, and wage changes:

March-April, 1930	2.90c	—4.5 per cent
May-June	2.90c	unchanged
July-Aug.	2.75c	—4.5 per cent
Sept.-Oct.	2.75c	unchanged
Nov.-Dec.	2.70c	—1.5 per cent
Jan.-Feb., 1931	2.60c	—3 per cent
March-April	2.65c	+1.5 per cent
May-June	2.50c	—4.5 per cent
July-Aug.	2.40c	—3 per cent
Sept.-Oct.	2.40c	unchanged
Nov.-Dec.	2.40c	unchanged
Jan.-Feb., 1932	2.40c	unchanged
March-April	2.30c	—3 per cent

Bridge Jury Is Named

American Institute of Steel Construction, New York, has named the following jury for its fourth annual beautiful steel bridge competition: Prof. L. C. Dillenback, school of architecture, Columbia university; Raymond M. Hood, architect, New York; Prof. C. T. Bishop, Sheffield Scientific school of Yale university; F. O. Dufour, consulting engineer, Philadelphia; A. L. Kocher, managing editor, *Architectural Record*, New York. The jury will meet June 8 to make the selection.

Steel Ingot Rate in April Is Lowest Since July, 1921

DAILY rate of open-hearth and bessemer steel ingot production descended in April to a new low for this depression and broke through all previous rates back to July, 1921—a situation that exactly parallels pig iron for April.

The April daily rate at 47,685 gross tons compares with 52,257 tons in March and 104,711 tons in April, 1931.

Only 22.52 per cent of capacity was engaged in April, contrasted with 24.68 per cent in March and 49.29 per cent in April last year.

A total output of 1,239,811 tons in April brought the 4-month total for 1932 up to 5,571,478 tons. This represents 26.31 per cent of capacity. In the first 4 months of 1931 production was almost twice as large, being 10,677,124 tons or 48.5 per cent of capacity.

In July, 1921, the low point of that depression was 36,713 tons daily, with a total of 917,824 tons for the month.

These statistics are by the American Iron and Steel institute, New York.

Eastern Rolling Mill Co., Baltimore, reports net loss of $169,751 for the first quarter, compared with a net loss of $67,048 for the same three months of 1931.

Urge Revision of Antitrust Laws

CINCINNATI—Revision of antitrust laws was demanded by resolutions adopted by the American Supply and Machinery Manufacturers association, National Supply and Machinery Distributors association, and Southern Supply and Machinery Distributors association, in convention here.

"We believe," the resolution reads, "that one of the principal causes of the present distressed condition of industry is the demoralization from reckless competition occasioned by the inability of competing sellers to co-operate lawfully and effectively, not alone in the development and use of our natural resources, but equally so in the general business of manufacture and distribution."

Officers chosen by the association are:

American Supply and Machinery Manufacturers' association; President, H. F. Seymour, Columbian Vise & Mfg. Co., Cleveland; vice presidents, J. Harvey Williams, New York, and W. T. Kilborn, Pittsburgh; treasurer, William H. Fisher, Chambersburg, Pa.; executive committeemen, G. H. Halpin, St. Paul, and Wylie K. Lee, Grand Rapids, Mich.

National Supply and Machinery Distributors' association; President, Harry E. Ruhf, Cleveland Tool & Supply Co., Cleveland; vice presidents, William Todd, Pittsburgh, and E. B. Hunn, New Haven, Conn.; executive committeemen, R. C. Duncan, Indianapolis; Wendell H. Clark, Cleveland; and A. B. Paul, Buffalo.

Southern Supply and Machinery Distributors' association: President, W. M. Given, Young & Vann Supply Co., Birmingham, Ala.; vice presidents, W. W. Taylor, Pine Bluff, Ark.; and C. C. Kreuger, San Antonio, Tex.; executive committeemen, G. C. Weeks, Monroe, Ill., and G. C. McAlester, Macon, Ga.

Implement Makers Are Retrenching

CHICAGO—Farm equipment manufacturers are continuing retrenchment policies during the existing dull season. International Harvester Co. has in effect its 5-day week plan, which is said to result in an average reduction of operating costs by about 9 per cent.

Oliver Farm Equipment Co., in addition to numerous economies made effective in the last year, has scheduled a graduated salary cut, starting from a 10 per cent base. Deere & Co., Moline, Ill., have been considering a similar move. J. I. Case Co., Racine, Wis., also has been lowering cost during the winter and spring lull in production.

It is stated that all obligations due this year on tractors and other farm machinery ordered by the Russian soviet government in 1930 and shipped early in 1931 will be met by the soviet. Among companies holding Russian acceptances are International, Deere, Oliver, J. I. Case and the Massey-Harris Harvester Co. Inc., Batavia, N. Y. Total acceptances maturing in 1932 are estimated at about $7,000,000 for all companies. A few of the Russian tractor accounts already have been paid in full.

Republic Improves Showing

Republic Steel Corp., Youngstown, O., made a better financial showing in the first quarter of 1932

Steel Ingot Production—1931-32

95.21 Per Cent of Industry Reporting
Gross Tons

1931	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	2,044,298	296,620	2,340,918	2,458,689	27	91,063	42.86
Feb.	2,085,529	296,974	2,382,503	2,502,366	24	104,265	49.08
Mar.	2,504,060	346,137	2,850,197	2,993,590	26	115,138	54.20
Apr.	2,275,404	316,668	2,592,072	2,722,479	26	104,711	49.29
4 mo.	8,909,291	1,256,399	10,165,690	10,677,124	103	103,361	48.50
May	2,083,833	301,639	2,385,472	2,505,485	26	96,365	45.36
June	1,730,109	246,365	1,976,474	2,075,910	26	79,843	37.58
July	1,570,776	225,030	1,795,806	1,886,153	26	72,544	34.15
Aug.	1,462,469	174,631	1,637,100	1,719,462	26	66,133	31.13
Sept.	1,274,321	199,151	1,473,472	1,547,602	26	59,523	28.02
Oct.	1,320,158	195,943	1,561,101	1,592,376	27	58,977	27.76
Nov.	1,276,906	240,441	1,517,347	1,593,684	25	63,747	30.01
Dec.	1,069,468	170,546	1,240,014	1,302,399	26	50,092	23.58
Total	20,697,582	3,009,894	23,707,476	24,900,195	311	80,065	37.69
1932							
Jan.	1,230,661	160,633	1,391,294	1,461,290	26	56,203	26.54
Feb.	1,232,568	157,067	1,389,635	1,459,547	25	58,382	27.57
Mar.	1,149,307	193,944	1,343,251	1,410,830	27	52,253	24.68
Apr.	1,036,227	144,197	1,180,424	1,239,811	26	47,685	22.52
4 mo.	4,648,763	655,841	5,304,604	5,571,478	104	53,572	26.31

Figures exclude crucible and electric ingots. Operating percentages for 1930 are based on capacity of 62,265,670 gross tons as of Dec. 31, 1929; for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930.

than in either the third or fourth quarters of 1931. In the quarter just closed the loss was $2,476,293. This compares with a loss of $2,728,078 in the third quarter of 1931 and $3,521,177 in the fourth.

Amalgamated Association Extends Wage Scales

Pittsburgh—Wage scales adopted by the recently adjourned national convention of the Amalgamated Association of Iron, Steel and Tin Workers at Follansbee, W. Va., are identical with the 1931-32 wage scales in the boiling, busheling, pile-on-boards, knobbling, clab-heating and shingling departments.

Last year's scales on bar and 12-inch mills were reaffirmed, as also was the case with the pipe or skelp mill and the guide and 10-inch mills. Generally, the sheet and jobbing mill wage scales of last year were adopted.

The convention created a new office, that of international organizer, whose duty shall be to build up membership.

Members of the conference committees were named, two in the bar iron division and 16 in the sheet, tin and tin house division. These committees will ask later for a conference with independent mill managers to discuss the terms offered in the proposed wage scales.

Fewer Ships on Ways

American shipyards on April 1 were building or had under contract for private owners, 81 vessels aggregating 174,087 gross tons, compared with 84 vessels aggregating 228,967 tons on March 1. No vesels were building on the Great Lakes.

APRIL IRON PRODUCTION

	No. in blast last day of month		Total tonnage made	
	Apr.	March	Merchant	Nonmerchant
Ohio	16	16	8,838	210,132
Pennsylvania	12	16	22,517*	186,259*
Alabama	7	4	36,076	38,427
Illinois	6	6	38,303	45,492
New York	5	5	31,384	47,118
Colorado	1	1		
Indiana	5	5		
Maryland	2	2	925	132,844
Virginia	0	0		
Wisconsin	0	0		
Kentucky	1	1		
Massachusetts	0	0		
Tennessee	0	0	8,124	27,257
Utah	1	1		
West Va.	1	1		
Michigan	2	2		
Minnesota	0	0	0	22,033
Missouri	0	0		
New Jersey	0	0		
Total	59	60	146,167	709,567

*Includes spiegeleisen and ferromanganese.

April Pig Iron Total Lowest Since Figures Compiled

TOTAL production of coke pig iron in April dropped to the lowest point since figures have been compiled. At the same time, average daily output set a new low point for the present depression and stands only 632 tons a day above the all-time bottom in July, 1921. Active blast furnaces on April 30 numbered 59, one less than on the last day of the preceding month and two more than the historical low of last December.

In April, total output amounted to 855,734 gross tons, which compared with the 967,015 tons of March, was a drop of 111,281 tons, or 11.5 per cent. The previous all-time low point was 864,642 tons in July, 1921, a month of 31 days in contrast to April with 30 days. Production for April, 1931, was 2,009,582 tons.

Average daily production in April was 28,524 tons, this being a decrease of 2670 tons, or 8.5 per cent, from the 31,194-ton rate of March. The July 1921 figure was 27,892 tons. In April, one year ago, the daily rate was 66,986 tons.

For the four months ending April, total iron output was 3,754,736 tons, which compared with the 7,465,123 tons of the corresponding period of 1931 is a loss of 3,710,387 tons. Production thus far this year represents 50.3 per cent of the 1931 four-month total, 30.9 per cent of the 1930 total and 26.7 per cent of the 1929 record.

Relating production to capacity, the operating rate of April was 19.8 per cent, against 21.7 per cent in March and 23.0 per cent in February.

During the month, 4 furnaces were blown in and 5 were blown out or banked, the net loss being 1 furnace. Of the merchant class, 1 stack was blown in and 2 were blown out, with a decrease of 1 stack for this class. Of the nonmerchant or steelworks class, 3 furnaces were blown in and 3 removed from blast. In addition, an increasing number of stacks operated at reduced rates, with bankings becoming more frequent.

Furnaces resuming operations in April were: In Illinois: Gary No. 9, Illinois Steel Co. In Alabama: Ensley Nos. 3, 4 and 6, Tennessee Coal, Iron & Railroad Co.

The following furnaces were blown out or banked during the month: In Pennsylvania: Carrie Nos. 1 and 6, Carnegie Steel Co.; Palmerton No. 2, New Jersey Zinc Co.; Neville Island, Davison Coke & Iron Co. In Illinois: Gary No 10, Illinois Steel Co.

With the dismantling of the Dover, O., blast furnace, formerly owned by the M. A. Hanna Co., and later the Valley Furnace Co., as announced by STEEL, April 18, page 23, the number of potential stacks in the United States is reduced from 298 to 297.

MONTHLY PRODUCTION

	1932	1931	1930
Jan.	971,437	1,715,443	2,838,751
Feb.	960,550	1,711,192	2,845,937
Mar.	967,015	2,028,906	3,252,822
April	855,734	2,009,582	3,191,119
May		1,995,001	3,241,477
June		1,637,998	2,934,508
July		1,462,270	2,638,441
Aug.		1,279,205	2,525,105
Sept.		1,168,436	2,276,781
Oct.		1,172,781	2,165,374
Nov.		1,101,820	1,865,458
Dec.		980,377	1,665,715
Total	3,754,736	18,263,011	31,441,488

AVERAGE DAILY PRODUCTION

	1932	1931	1930	1929
Jan.	31,336	55,337	91,573	110,742
Feb.	33,122	61,114	101,640	114,942
Mar.	31,194	65,448	104,930	119,622
Apr.	28,524	66,986	106,371	122,106
May		64,355	104,564	125,753
June		54,599	97,817	123,837
July		47,170	85,110	122,016
Aug.		41,264	81,455	120,845
Sept.		38,947	75,893	116,548
Oct.		37,831	69,851	115,747
Nov.		36,727	62,182	106,081
Dec.		31,625	53,732	91,513
Av.	31,031	50,035	86,141	115,808

RATE OF OPERATION
(Relation of Production to Capacity)

	1932[1]	1931[1]	1930[2]	1929[2]
January	21.8	38.4	65.0	79.0
February	23.0	42.5	72.1	82.2
March	21.7	45.4	74.5	85.5
April	19.8	46.5	75.4	87.4
May		44.7	74.2	89.8
June		37.9	69.3	88.5
July		32.7	60.3	87.2
August		28.7	57.8	86.4
September		27.0	53.8	83.3
October		26.3	49.6	82.6
November		25.5	44.1	75.8
December		22.0	38.1	65.5

[1]Based on capacity of 52,515,875 tons Dec. 31, 1930; [2]on capacity of 51,490,680 tons; [3]on capacity of 51,069,895 tons. Capacities by American Iron and Steel institute.

Foundry Receiver Named

Chicago—E. H. Johnson, First National Bank building, Chicago, has been appointed receiver for the Ferguson & Lange Foundry Co., Chicago. This company was established in 1896.

Industrial Men in the Day's News

Gen. T. S. Hammond, President, American Foundrymen's Association

ONLY 48, he is president of an important manufacturer of foundry equipment, and vice president of three similar companies.

AN active career in the military includes service on the Mexican border and in France. He is a general in the Illinois National Guard.

YET he has found time to be active in association work, now being head of the Overhead Crane institute as well as the Foundrymen's group.

A MAN whose career is characterized by virility and aggressiveness comes to the presidency of the American Foundrymen's association through the election of Gen. T. S. Hammond at the association's convention in Detroit last week, further details of which appear on page 15.

There may have been a hint of the future in the fact that General Hammond was born Oct. 29, 1883, at Crown Point, N. Y., a spot notable in the annals of the Revolutionary war, for a very distinct military career has paralleled his industrial life.

After receiving his preliminary education at Hyde Park high school, Chicago, General Hammond entered the University of Michigan, distinguishing himself as a football player.

One year after graduation, or in 1907, he entered the employ of the Whiting Corp., Harvey, Ill., through which he advanced successively as purchasing agent, assistant secretary, vice president and secretary, vice president and treasurer, and finally president and general manager, his present position.

Meanwhile, General Hammond was pursuing an active military career, serving in 1916 on the Mexican border, spending 18 months in France, and now being brigadier general commanding the 65th infantry brigade, Illinois National Guard. In 1918 General Gouraud decorated General Hammond with the French legion of honor.

General Hammond also is vice president of the National Engineering Co., Swenson Evaporator Co., Grindle Fuel Equipment Co. and the Joseph Harrington Co., all of Chicago.

He is president of the Electric Overhead Crane institute, first vice president of the Illinois Manufacturers association, past president of the Foundry Equipment Manufacturers and National Metal Trades associations.

His cubs are the University, Racquette, Industrial and Flossmoor country, all of Chicago.

W. L. ALLEN, chairman of the board of the Sheffield Steel Corp., Kansas City, Mo., and director and member of the executive and finance committee of the American Rolling Mill Co., Middletown, O., has resigned to engage in consulting work.

Mr. Allen, who organized the Sheffield corporation, has had wide experience in operation, sales and financing of steel companies, and following the merger of that company with the Rolling Mill company has spent considerable time in Europe in connection with its foreign activities.

□ □ □

O. E. Laechelt, for the past five years with the Bunting Brass & Bronze Co., Toledo, O., has joined the sales department of the Detroit Seamless Steel Tubes Co., Detroit, specializing in that company's newly-developed steel-back bushings.

□ □ □

George H. Weiler, until recently secretary-manager of the Forging Manufacturers association, has joined the sales department of the Standard Steel Works Co., Burnham, Pa. Mr. Weiler began his career in 1900 with the Brooks Locomotive Works, Dunkirk, N. Y., and continued there after the company became known as the American Locomotive Co. In 1915 he was appointed assistant manager of sales at New York for the American company and several years later became manager of sales, resigning in 1929 to become secretary-manager of the Forging Manufacturers association.

□ □ □

G. P. Blackiston, formerly sales promotion manager, Wright Mfg. Co., has been appointed to the same capacity with the Kron Co., New York.

□ □ □

John A. Moore has resigned as manager of the Acme Foundry Co., Detroit, a post he has held the past four years, to enter private consultation work.

□ □ □

George A. Blackmore, vice presi-

HARRY G. UPHOUSE

Who with William S. Stephenson has organized the Philadelphia Steel Sales Co., 1212 Commercial Trust building, Philadelphia

dent and general manager, Westinghouse Air Brake Co., Wilmerding, Pa., has been elected a director of the A. M. Byers Co., Pittsburgh.

□ □ □

Nicholas Dreystadt, for the past six years general parts and service manager, Cadillac Motor Car Co., Detroit, has been made works manager, succeeding A. U. Widman, resigned.

□ □ □

John McL. Duncanson, export manager of the Steel Co. of Scotland Ltd., has arrived in Canada to take charge of an extensive exhibit of the products of his firm which is being brought over on the Scottish trade ship LETITIA.

□ □ □

D. S. McDannell Jr., acting director of purchases, of Deere & Co., Moline, Ill., since the death last September of Herbert G. Copp, has been appointed director of purchases. For 28 years Mr. McDannell has been associated with Deere & Co. in the purchasing department.

□ □ □

William E. Friedman, of the Hausman & Wimmer Co., New York, was elected president of the New York chapter of the Institute of Scrap Iron and Steel, May 4, succeeding J. L. Spitzer.

P. W. Bowers, of the Perry Buxton Doane Co., was elected chairman of the executive committee.

□ □ □

Charles A. McCune, for several years director of research, Welding Engineering & Research Corp., New York, and prior to that in the same capacity with the American Chain Co., Bridgeport, Conn., has affiliated with the Industrial Publishing Co., Cleveland, publisher of *Industry and Welding*, as vice president and technical director. Mr. McCune is a past president of both the American Welding society and International Acetylene association.

Donates Garden Tracts

Mackintosh-Hemphill Co., Pittsburgh, steel and rolling mill machinery, has allocated a 40-acre tract along the Allegheny river near Pittsburgh for use as gardens by persons applying through charitable organizations. More than 10,000 applications have already been received. W. C. Rice, treasurer of the Mackintosh company, is in charge of preliminary work and erection of shelters.

Obituaries

COL. C. C. SMITH, 70, founder of Union Steel Casting Co., Pittsburgh, died in Jacksonville, Fla., May 2. Colonel Smith began his industrial career as a clerk with the Carnegie Steel Co., and founded the Union Steel Casting Co. in 1899. He served as chairman of the board from 1918 to 1929. He was commissioned a lieutenant colonel during the world war, being a member of the war claims board, and served with the New York district for ordnance. He also was board chairman of the Pittsburgh Rolls Corp.

□ □ □

John A. McRea, 77, pioneer industrial leader and president, Coast Iron & Machine Works, Tacoma, Wash., died recently.

□ □ □

Samuel E. Doak, 49, prominent mining engineer and authority on manganese ore, died at Philadelphia, May 2.

□ □ □

William Kerr Kavanaugh, 72, civic and industrial leader of St. Louis, president of the Southern Coal, Coke & Mining Co., and identified with the Lakes-to-Gulf Waterway association, now the Mississippi valley association, died recently.

□ □ □

Edward H. Crosby, 64, vice president, Veeder-Root Inc., Hartford, Conn., died April 30 at Hartford, Conn. He joined the Veeder Mfg. Co. at the time of its organization, 1895, and later became superintendent. He was a native of Yarmouth, Nova Scotia.

□ □ □

Frank W. Diehl, 54 vice president, Milwaukee Gear Co., Milwaukee, died April 28. He had been ill eight months and underwent an operation in September. Prior to joining the Gear company in 1922, Mr. Diehl was for many years assistant superintendent of the National Brake & Electric Co., Milwaukee.

WILLIAM S. STEPHENSON

Who with Harry G. Uphouse has organized the Philadelphia Steel Sales Co., 1212 Commercial Trust building, Philadelphia

□ □ □

Charles J. Harrah, 76, president of the Midvale Steel Co., Nicetown, Pa., at the time it was taken over by the former Midvale Steel & Ordnance Co., in 1915, died in France, May 2.

□ □ □

Elgin Braine, 40, for 20 years associated with the American Steel & Wire Co. and for the past 12 years district sales manager at Columbus, O., died May 2. During the war Mr. Braine served as personal chauffeur for General Pershing, and a personal message recalling his services was received from the general.

□ □ □

Elmer O. Lange, 36, production manager, South Side Malleable Castting Co., Milwaukee, until illness caused his retirement two years ago, died April 29. He was born in Milwaukee, son of Fred A. Lange, founder of the South Side Malleable as well as the Crucible Steel Casting Co., and the brother of Walter W. Lange, president of the South Side, and Albert C. Lange, president of the Crucible company.

□ □ □

George W. Theiss, 69 oldest executive of the Bethlehem Steel Co. Lackawanna plant, and a nationally known authority on structural section production, died May 3 at Buffalo. He joined the staff of the old Lackawanna Steel Co. in 1912, after previous service with the Cambria and Illinois companies. He has been superintendent of the Lackawanna structural and bar mills since that time, continuing as such until he became ill a month prior to his death.

Here and There in Industry

GENERAL ELECTRIC CO., Schenectady, N. Y., has organized an air conditioning department to market devices for home heating, humidifying and temperature control. One of the first products will be a complete oil-burning furnace. J. J. Donovan, Cleveland, formerly in charge of apartment house refrigeration sales, will be manager. Associated with him will be E. D. Harrington, Schenectady, in charge of application engineering; J. R. Rue, Pittsfield, Mass., in charge of manufacturing; H. S. Woodruff, Schenectady, in charge of design engineering. Headquarters will be at 120 Broadway, New York.

□ □ □

Surface Combustion Co. has moved its Pittsburgh sales office from the Oliver building to 921 Grant building.

□ □ □

Uddeholm Co. of America Inc. has moved its office to 155 Forty-fourth street, New York.

□ □ □

Jenkins Bros. Ltd., Lachine, Que., has completed and put into service a new unit of its bronze and iron foundry.

□ □ □

Jobson-Gifford Co., contractor and engineer, has moved its offices to the Commerce building, 155 East Forty-fourth street, New York.

□ □ □

Egan, Webster & Co. Inc., Pittsburgh, refractory producers, have moved their offices from the Oliver building to suite 1924 Grant building.

□ □ □

Standard Bronze Co. Ltd., Toronto, Ont., is adding to its products the lighting fixtures and lamps produced by the Lightolier Co., New York, heretofore imported.

□ □ □

Yates American Machine Co., Seattle, has leased space at 2627 First Avenue South, where Northwest district offices will be maintained, with a branch at Portland, Oreg.

□ □ □

Gifford Screw Products Co., Worcester, Mass., has been licensed by the Dardelet Threadlock Corp., New York, to manufacture and sell special screw machine products with the Dardelet self-locking thread.

□ □ □

Orville Simpson Co., Cincinnati, manufacturer of screening devices, has appointed Cleveland Duplex Machinery Inc., Penton building, Cleveland, its representative in northeastern Ohio. This company will handle sales and service of the Simpson equipment.

□ □ □

Erman-Howell & Co. Inc., Chicago, iron, steel and alloy scrap, car materials and storage tanks, have moved their office from the McCormick building to the company's car dismantling plant at 300 West Eighty-seventh street, Chicago.

□ □ □

American Steel & Wire Co. has moved its Chicago warehouse from 403 West Lake street to 2364 South Ashland avenue. The warehouse has been at the Lake street address for many years. The new location is close to a large industrial district on the South Side.

□ □ □

Dominion Engineering Works Ltd., Montreal, Que., has effected an agreement with the Farrel-Birmingham Co., Buffalo, for exclusive Canadian rights to its designs and patents for manufacturing machinery for rolling nonferrous metals. The agreement covers machinery for the rubber, linoleum and asbestos industries, as well as stone crushers.

□ □ □

Crompton & Knowles Loom Works, Worcester, Mass., with several Rhode Island units, is considering elimination of several divisions in that state under a proposed consolidation plan which would affect several branches. More of the erecting operations of the company would be housed under one roof, although definite action on any one plan has not been taken.

□ □ □

Silent Glow Oil Burner Corp., Hartford, Conn., has bought the assets of the Mid-West Oil Burner Mfg. Co., Chicago, and probably will move its equipment to the plant at Hartford. The Mid-West company has established a line of oil burners covering installations up to 20,000 square feet of steam radiation.

□ □ □

Osborn Mfg. Co., 5401 Hamilton avenue, Cleveland, has added a line of overhead materials handling equipment. The new equipment has been designed and will be built in the new materials handling division, according to Franklin G. Smith, president. J. B. Forker Jr. is sales manager of the division and is in charge of designing. R. W. Hisey, secretary of the Osborn company, is in charge of production.

□ □ □

Gleaner Combine Harvester Corp., Independence, Mo., manufacturer of harvester-thresher and corn combines, is being reorganized as the Gleaner Harvester Corp., following recent sale of the plant and assets to a reorganization committee. W. J. Brace, Kansas City, Mo., operating receiver, will be president.

□ □ □

Electric Furnace Co., Salem, O., has bought the business of the Process Engineering & Equipment Corp., Attleboro, Mass., and its equipment has been removed to the plant at Salem. J. F. Schrum, formerly technologist for the Process Engineering & Equipment Corp., is now connected with the Salem organization.

□ □ □

Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., for many years a manufacturer of unmachined drop forged steel pipe flanges, has completed the installation of machinery for completely machining these flanges. The company is now furnishing pipe flanges either rough or machined, in all threaded types and in high or low welding neck types.

□ □ □

Farval Corp., 3277 East Eightieth street, Cleveland, has acquired manufacturing and sales rights of the Farval centralized system of lubrication, formerly manufactured by Lubrication Devices Inc., Battle Creek, Mich. Officials include Howard Dingle, president; W. W. Clark, vice president; H. C. Robinson, treasurer; A. C. Blair, secretary.. A. J. Jennings, formerly vice president of Lubrication Devices Inc., is general sales manager of the Farval Corp. Distribution for the central industrial section is being handled by the Dingle-Clark Co., with offices in Cleveland, Cincinnati, Pittsburgh and Philadelphia.

□ □ □

Brainard Steel Corp. Warren, O., has appointed Henry T. Taubensee, 400 West Madison street, Chicago, its representative in that district.

□ □ □

Dravo-Doyle Co., Pittsburgh, has bought the sales and engineering business of the Rush Machinery Co., Pittsburgh, and will operate it as a division. The latter has been distributor for the Iron Fireman Mfg. Co. for some time.

□ □ □

Pioneer Engineering & Mfg. Co., Detroit, manufacturer and distributor of coolant and lubricant pumps, multiple spindle drill heads and electrochemical copper patterns, has appointed as exclusive sales agents Banner Machine Tool & Supply Co., St. Louis; Machinery Sales & Engineering Co., Indianapolis; Walter J. Whatley, Syracuse, N. Y.

MIRRORS of MOTORDOM

DETROIT

ONLY a scant third of a year has elapsed since the 1932 automobile shows, and the National Automobile Chamber of Commerce program of concentrating model changes at the beginning of the year still is technically in effect, yet the atmosphere in Detroit is charged with rumors of nearby changes.

By mid-year, it is expected, there will be at least two newcomers in the extremely low-price field; one may be announced this month. A new twelve is on the way. In addition to these three developments, it will be recalled that since January show time Reo, Plymouth, Franklin and Ford—always a lone wolf—have brought out new lines.

As an offset, Peerless, one of the oldest manufacturers, has cleared its factory sales branches of new cars, is liquidating its stocks of used cars, and is distributing some of its cash reserve, inasmuch as it is no longer to be classified as an active manufacturer.

G. M. C. Busy on Dies

General Motors is understood to have in its tool and die design department more than three times the number of employes required in between-model periods. This interest is almost the last outpost of the orthodox type of radiator shell. General Motors, incidentally, is not through retrenching in its upper salary brackets and continues to draw parts manufacture into its own shops.

It may be that the battle for supremacy in the extremely low-price field is just beginning. Ford may be withholding his fire by concentrating for the present on the new eight. No matter how low competitors may go, Ford can be relied upon to remain in the field. And for steel and other material suppliers this means added pressure upon prices by the contestants.

As related by Alfred Reeves, of the automobile chamber of commerce, over 60 per cent of all automobiles are bought by persons with annual incomes of $3000 or less; more cars are purchased by persons with incomes under $1400 than by persons rating $6500 and over; 85 per cent of all cars are priced $750 or less at the factory. This explains the attractiveness of the low-price market.

Best Output in 8 Months

Due largely to the slow but assured gains by Ford and the steady schedules of Chevrolet and Plymouth, the outlook for automobile production in May is the brightest in eight months. Official government statistics now place March output of all motor vehicles in the United States at 118,959 units, compared with 117,418 in February and 119,344 in January. April probably exceeded March by a fair margin. May apparently will exceed each month since last September, and should better its total of 140,566 units.

Last week, the Ford rate on the eights still was a little short of 1000 daily, but was climbing. Dealers are now making demonstrations. The goal for May continues an average of 2000 units a day, or slightly above 40,000 for the month. Including assemblies of the four, principally for commercial jobs, Ford production in May will probably approximate 60,000. Chevrolet will not fall far short of this total, while Plymouth will produce about 20,000 units. Among these three close to 140,000 units is in sight—always provided Ford gets under way.

Practically all Ford branch assembly plants are rehiring former employes. At present, these branches will largely assemble the four, and most eights will be shipped complete from Detroit. Relatively, demand for Ford commercial cars powered by the revised 4-cylinder engine is the heaviest in some months.

It appears that Ford steel releases in the Detroit area have been moderately extensive. The Great Lakes plant of the National Steel Corp. last week was operating its strip mills practically full, toward the end of the week was putting on a bar mill, and at the close of the week its average operation was close to 75 per cent. The Michigan Steel division of National Steel, rolling sheets, was at 60 to 70 per cent last week.

◆

Low-pressure balloon tires, requiring on a car of the Chevrolet type as little as 12 pounds of air, may supply tire manufacturers with a new talking point but may be something for spring, shock absorber and wheel interests to worry about. While only a generalization, the research chief of one such tire manufacturer visualizes the time when tires will take over a complete job of cushioning, permitting wheels to be hung directly on the frame. Chevrolet, to cite only one make of car, is beginning to push models equipped with this new type of tire.

Starts Large Bus Contract

General Motors Truck, at Pontiac, is beginning the manufacture of 200 buses for the Greyhound system, at the rate of three a day. . . . Bendix has closed another contract for its automatic clutch, to be standard equipment on a medium-price line. . . . White Co. is offering, in its Indiana line, a 1½-ton truck—its first entry in the light delivery field. . . . Budd Wheel, in Detroit, is busy on Ford commercial car wheels. . . . Briggs Body is receiving good releases for its refrigerator cabinets. . . . Chevrolet estimates that every car sold means the equivalent of 71 days work for one man.

EDITORIAL

Congress Is Major Obstacle To Reconstruction

IN DETROIT last week more than a thousand members of the American Foundrymen's association and seven co-operating organizations met in annual convention. Every individual in attendance—whether he be owner, director, stockholder, executive officer, operating superintendent, employe, educator or professional consultant—was there because his personal interests are dependent in some degree upon the rise or fall of the foundry industry.

Each went to Detroit to contribute something of his experience to a common pool of knowledge and to receive therefrom ideas and information from the experience of his fellows. No one who watched the proceedings closely can doubt the earnestness or the sincerity with which foundrymen regard this convenient process of exchanging data.

Sessions dealing with fundamentals of foundry practice often extended far beyond the scheduled hour of adjournment. On several occasions groups were compelled to move into larger rooms to accommodate those seeking admission. A conference on foundry costs was given extraordinary attention. Several speakers on the subject of waste elimination cited instances of economies ranging from a few hundred up to a half million dollars, resulting from better management. Scores of authors of technical papers revealed investigations, research and other developments which promise new and better products. Practices in foundry operations which insure greater uniformity of quality were outlined. Educational work, market research, standardization and numerous other constructive activities were shown to be progressing favorably.

Orderly Search for Better Business Methods Contrasts with Political Chaos

The sum total of these achievements is that all participators, as well as many who do not participate, receive advantages of incalculable value. Shop efficiency is increased, standards of quality are elevated, operating costs are lowered, and management of individual companies is made far more intelligent.

Under ordinary circumstances it would be safe to say that an industry working so earnestly to keep its house in order would have little to fear. Foundrymen have no illusions regarding the depression or the competition of other materials. They know the temper of these two foes and are prepared to give them battle. But neither foundrymen, nor the executives of any other industry, realized until recently that in addition to coping with the expected problems of their own businesses in time of depression, they would be obliged to face the destructive influence of a United States congress that has gone mad.

To think simultaneously of the orderly scene at Detroit, where industrial leaders were working constructively for collective and individual improvement, and of the chaotic spectacle in Washington, where misguided servants of the public are doing their utmost in destructive folly, should be sufficient to shock every thinking business man into immediate action.

Every fine accomplishment at Detroit, every hard won achievement in economy by management, and every sacrifice that has been made thus far in industry to meet present conditions will be made futile if congress is not persuaded to depart from its present path of destruction. What advantage can be gained by the owner of a shop in painfully reducing costs if the profits of his good management are to be taken away in unnecessarily high taxes—taxes which are excessive because congress refuses to economize in expending the people's money?

Business Men Have Need To Warn Congressmen Extravagance Must Cease

We urge our readers to study the address of S. W. Utley, appearing on the opposite page. Presented before a meeting of the Foundry Equipment Manufacturers' association, it received not only the approval of that body but also prompted the A. F. A. to present a resolution in behalf of the entire foundry industry urging upon congress "the elimination of wasteful expenditure of taxes as now existing in the federal government," and further calling upon individual firms and their representatives to demand of their congressmen "immediate and drastic economy."

This is a step in the right direction. Every industrial concern individually and in concert with others in its industry should now force a showdown in congress. It is time to call the bluff of the senators and congressmen who are shouting defiantly that they will refuse to cut their own salaries.

If ever the stinging lash of public opinion were needed, it is now. Apparently congressmen are beyond the appeal of reason, but they do understand the power of votes. Now is a good time to show them that continued extravagance, in the face of dire need, is poor politics.

WHAT PRICE TAXES?

BY S. W. UTLEY,
President, Detroit Steel Casting Co.

From an address before the Foundry Equipment Manufacturers' association at Detroit, May 4, 1932

COMPARED with 1913, public expenditures of the United States in 1930-31 have increased 402 per cent, of England 296 per cent, of Germany 273, Sweden 262, Switzerland 243, France 99, and of Italy 76 per cent. Western civilization today faces one of greatest crises of all times.

The total cost of all branches of government in the United States in 1913—local, state, federal—was 2.9 billion dollars. In 1929 this cost had increased to 13 billion dollars against a national income of 86 billion dollars, or 15.3 cents from each income dollar. In 1931, according to the *Chicago Tribune*, the income dropped to 52 billion dollars, while the expenditures increased to 14 billion dollars, or 27 cents from each income dollar.

The cost to this nation of the World war for the 19 months in which we were engaged was 22 6 billion dollars; the cost of running the peace-time governments of the United States the last 24 months was 27.5 billion dollars.

It is estimated the federal government will spend 676 million dollars more in 1932 than it did in 1922, ten years ago. Interest on the public debt, due to the wisdom of Mr. Mellon in reducing it, has decreased 394 million dollars, so that the total increase in other expenditures is $1,070,000,000. According to Walter Lippman, this is made up of the following increases: National defense, $93,000,000; veterans, $329,000,000; farm aid, $334,000,000, and all other, $340,000,000. I think it is fair to assume that the major part of these increases have been made in an effort to secure the vote of the organized minority which was advocating them.

So much for expenditure. The story of receipts presents another picture.

Total debts of the American government before the war were 4.8 billion dollars; the total debt today—local, state and federal—is estimated at 35 billion dollars, of which approximately 16 billion dollars is a federal legacy of the war, and the remaining 19 billion dollars represents quite largely the passing on to the future of the payment for present expenditures. Interest and sinking fund requirements constitute a tremendous drain on all tax receipts. As a result, hundreds of issues of municipal bonds, once the bulwark of sound investments, are in default, and relatively few governmental divisions are today solvent. We have reached the extraordinary situation where the ownersip of property has become a liability, not an asset.

Hope Lies in Forced Economy

In this very situation lies the hope of our salvation, for when government can neither borrow or collect it must of necessity begin to economize.

But black as is this picture, it is to my mind by no means the most tragic part of the situation. In 1913 we passed the sixteenth amendment, giving congress the right to levy income tax "Without apportionment among the several states and without regard to any census or enumeration." It provided the means of shifting the great bulk of federal taxation onto the shoulders of a few wealthy states.

During the war we created the federal board for vocational training. This innocent-appearing act provided for federal aid to the states on a fifty-fifty basis for teaching boys to become carpenters and mechanics, and girls to do fancywork. It opened the way for the shiftless states to spend money by the thrifty ones. It provided an additional argument to all states to understate state extravagances of which the federal government would pay one-half. It was followed by the Shepherd maternity bill, and by a bill providing for building roads, all on the same basis of federal aid, until today the draw-back received by many of the western states is greater than the total federal taxes paid, as will be readily seen from the following statement covering the record of a recent year.

Name of State	Federal Taxes Paid	Payment Received	Ratio
Idaho	$ 868,000	$1,315,000	$1 to $1.51
Montana	2,610,000	3,107,000	1 to 1.19
New Mexico	924,000	1,387,000	1 to 1.80
N. Dakota	556,000	1,704,000	1 to 3.07
S. Dakota	887,000	1,712,000	1 to 1.93
Wyoming	752,000	2,240,000	1 to 2.99
New York	928,000,000	8,707,000	1 to .0093

New York not only pays her own federal tax but that of many other states as well. The house recently passed and the senate now is considering "A Bill to Relieve Unemployment," by appropriating $136,000,000 to the states for building roads. I am informed that if this bill becomes a law the state of Michigan, where there is much unemployment, will pay out in taxes to meet this appropriation $5,292,000, while she will receive back $3,783,000 or 71 cents on the dollar. Texas will pay out $1,608,000 and will receive back $7,667,000, or $4.76 on the dollar.

In a normal year 65 per cent of the federal revenue is received from income taxes. Of this, 16,000 individuals and corporations pay 60 per cent; 400,000 individuals and corporations, out of a total population of 123,000,000 pay 97 per cent of the tax.

Biting the Hand That Pays the Taxes

Such is the effect of changing a line in the federal constitution! So far have we gone in transferring the cost of federal government from the shoulders of the mass of citizens, who presumably benefit from it, to the shoulders of productive wealth, which after all is the basis of the prosperity of all citizens! With local governments plundering the home owner and the corporation, with the federal government taking away a considerable part of what is left, through income and estate taxes, it is no wonder that business hesitates and unemployment stalks the land!

To the business man the answer seems clear and unmistakable. Governmental costs must be reduced, non-essential services must be curtailed, budgets must be balanced by lowering expenditures, not by constantly finding new methods of taxation. There is no unit of government today which is not paying for activities which have long since ceased to be useful, or which never should have been included in governmental activities. There is no unit in which expense cannot be materially reduced provided there is the will and determination to do so. Yet, so far, I know of no legislative body which is honestly and wholeheartedly attempting to cut costs and deflate government activities.

What is the answer? What can you do about it?

Well, if you don't do something about it, no one else will. Generally speaking, elective officers will become economy-minded just so soon as they realize that these demanding economy will cast more votes than those demanding extravagances. See to it that no organization of which you are a member asks for legislation increasing appropriations. Don't preach economy for everything except your own pet extravagance.

Don't think that your representative can read your mind. Get in touch with him and make your position perfectly clear to him. Check up on your representatives, local and national. Are they voting for economy? Are they going to represent you again after the next election?

Above everything else, in the present emergency, get in touch with your representatives in both the senate and the house and make clear to them in unmistakable terms your demand for lower expenditures.

THE BUSINESS TREND

Business Stunned by Mad Folly of Congress

EVENTS in the first week of May do not reveal any important changes in the trend of industrial activity. Nor do the monthly reports for April, now being published, show a departure from the state of hesitancy and uncertainty that has prevailed since the turn of the year.

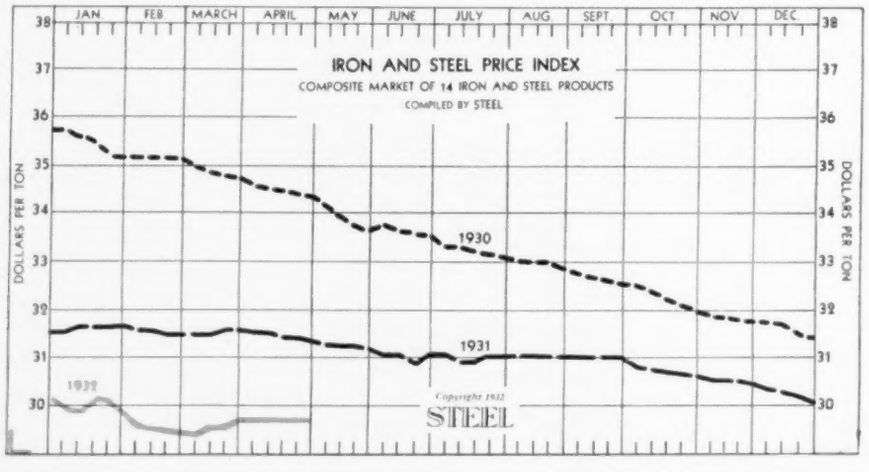
Indexes of commodity prices continued their downward course throughout the fourth month. Production of pig iron eased off to a daily average which is dangerously close to the record low which was registered in July, 1921. Steel ingot output in April started the second quarter at a rate discouragingly below the monthly average for the first quarter. Car loadings in the week ending April 23 were down again, indicating that the support for the usual seasonal upswing in the fourth month has not appeared this year.

The automobile industry furnishes mildly hopeful prospects. March figures just released reveal a less than expected gain, but this is due to delays in getting started with small car schedules. April will show an improvement, and on the basis of present expectations, May will be the best month since last September.

Satisfaction in the generally improved condition of banks is somewhat marred by reports of continued liquidation of collateral in certain quarters. More definite assurance that the present policy of the federal reserve will be continued would help in strengthening confidence. The number of banks which suspended in April again was low, and as in March several which had been closed resumed business. The work of the Reconstruction Finance Corp. continues to be reflected in the easier tone of credit in many localities.

House and Senate Still Rate Votes Above Security of Nation

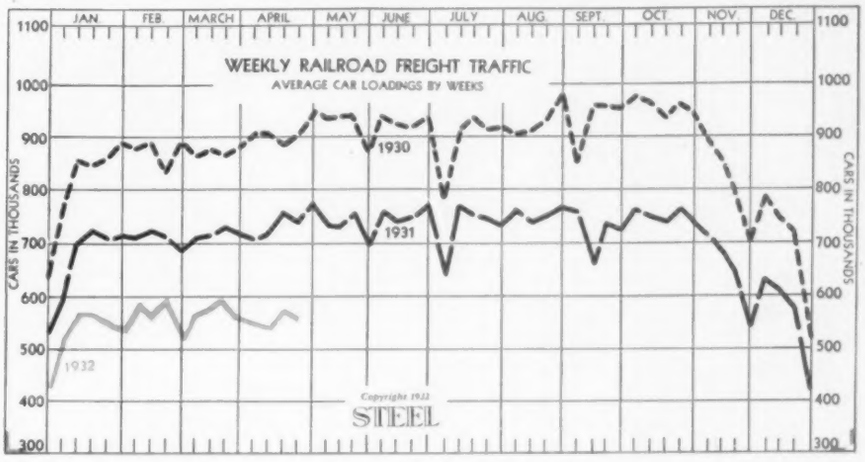
Today all of the foregoing factors bearing upon the state of business pale into insignificance when compared to the present spectacle of incompetence in congress. The stage is being set for a terrific awakening for politicians and public servants. Now is the opportune moment for a stinging reprimand. If President Hoover would or could do it in the manner of Theodore Roosevelt or Woodrow Wilson, the public would rise to his support. If the President fails, disgusted taxpayers may yet show congress what they think of its assinine performance.



1932	
Apr. 30	$29.70
Apr. 23	29.74
Apr. 16	29.74
Apr. 9	29.74
Apr. 2	29.81
Mar. 26	29.81

1931	
Apr. 29	$31.49
Apr. 22	31.51
Apr. 15	31.59
Apr. 8	31.67
Apr. 1	31.67
Mar. 25	31.71

	1932	1931
April 23.....	562,380	758,503
April 16	566,729	759,494
April 9	544,806	737,934
April 2	544,961	727,852
March 26	561,118	740,079
March 19	584,634	744,253



Freight Traffic Recedes Again In Third Week of April

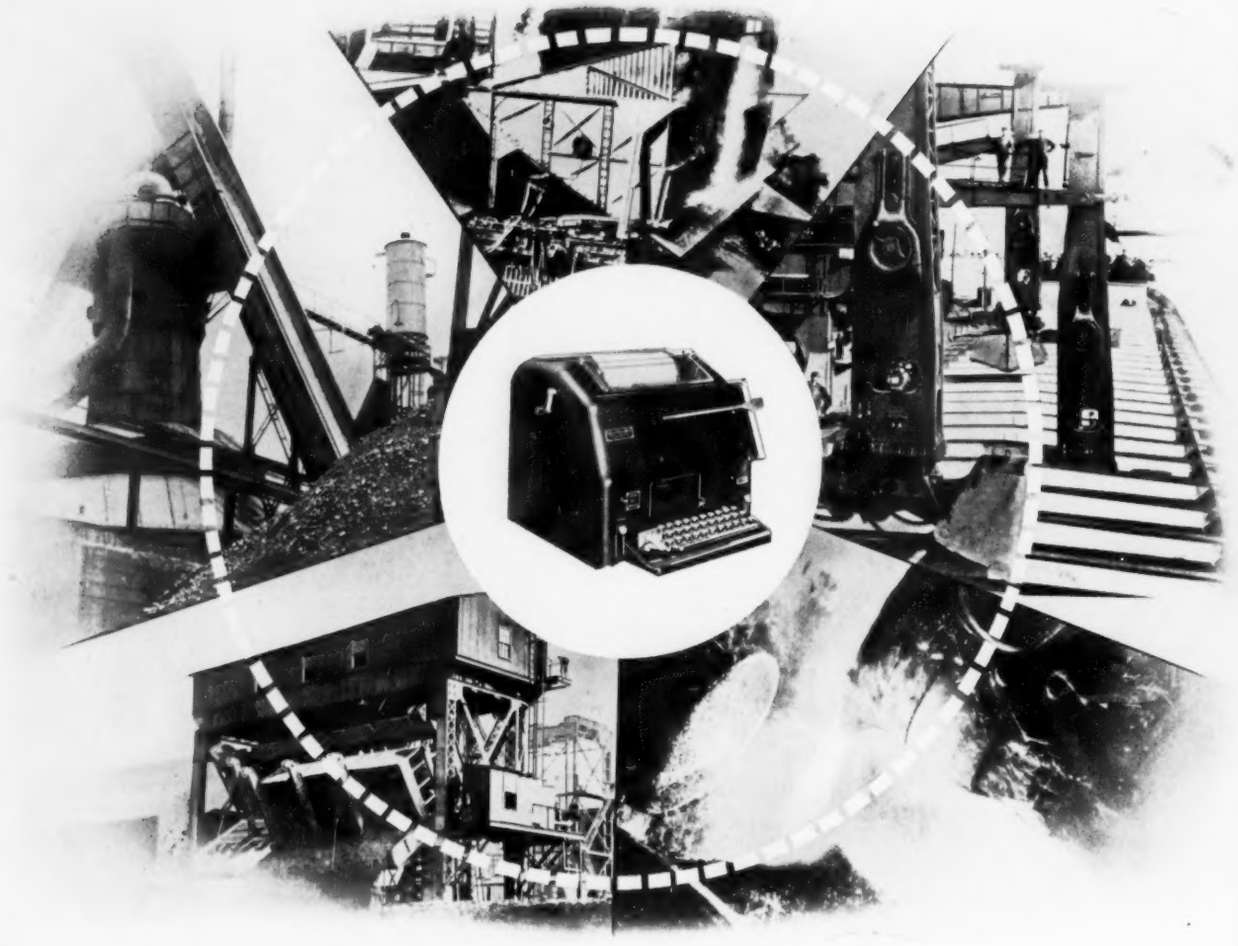
Loadings of revenue freight for the week ending April 23 totaled 562,380 cars, according to the American Railway association. This was a decline of 4349 cars from the preceding week and 196,123 cars below the corresponding week last year. Loadings thus far this year have aggregated 9,014,748 cars compared to 11,627,379 for the same period last year and 14,112,389 cars in the corresponding period in 1930. Small increases were shown in loading of ore and livestock, while declines were reported for miscellaneous freight, coal, forest products and merchandise in less than carload lots. All districts reported reductions in total loading of all commodities, compared not only with the same week in 1931, but also with the week in 1930.

Automobile Output Up Slightly in March; Industry Still Lags

Output from automobile plants increased only slightly in March over February. According to the monthly report of the United States department of commerce, March production totaled 127,277 units, compared to 122,895 cars in February. Output for the same period last year was considerably higher. The total production in February, 1931, was 229,811 units, while in March, 1931, that figure was exceeded by nearly 60,000. Although wholesale distribution of automobiles in the middle west showed a moderate recession in March, sales to consumers continued to show some degree of expansion. The number of cars sold by both distributors and dealers, however, was in only half the volume of a year ago.

March, 1932 127,277
Feb., 1932 122,895
March, 1931 289,398

CENTRAL CONTROL



of the Youngstown Sheet and Tube Company is aided by private line

TELETYPEWRITER SERVICE

THE Youngstown Sheet and Tube Company co-ordinates the varied production and distribution activities of widespread offices and mills with the help of private line Teletypewriter Service — *typing by wire*. So flexible and accurate is this speedy method of communication that executives in Youngstown and Chicago offices regulate operations as if their offices were in one building.

Orders received at Youngstown General Offices are *typed by wire* immediately to the Chicago District Office, then relayed to the mills involved. Shipping information is instantly available at headquarters. Purchases and production begin at once. No time is lost. Quick customer service is assured. Questions, answers, specifications, contract requirements may be transmitted instantly and accurately in *typewritten form*.

Regular daily production reports from all mills are relayed from Chicago to Youngstown General Offices by Teletypewriter. Identical typewritten records at both offices eliminate errors, do away with checking and costly duplication. Up-to-the-minute advice on production economies, purchases and sales may be speedily sent from headquarters to points affected.

Private Line Teletypewriter Service aids many businesses, large and small. It cuts costs, minimizes duplication, speeds service, regulates production operations, shipments. Your local Bell Telephone Business Office will gladly give you full information. You incur no obligation.

Utilizing the Heat in Coke by Dry Quenching

Part II

BY WILLIAM O. RENKIN
Lancaster Iron Works Inc.

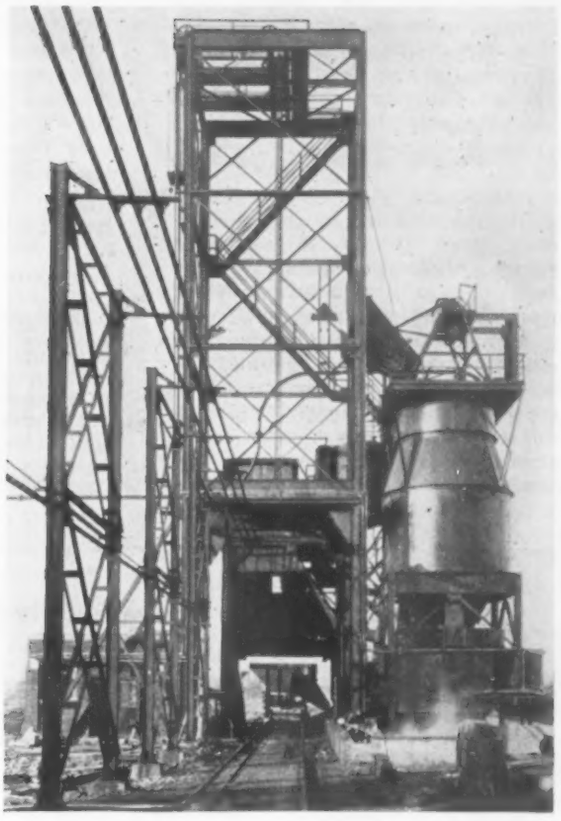


Fig. 5—Dry quenching installation of Consumers Power Co., Flint, Mich.

DRY-QUENCHED coke, being of more uniform size and devoid of moisture, carries with it less fines and breeze. Experience shows that fine coke and dust reduce the capacity of the blast furnace, since more resistance is offered to the blast. Further inconvenience arises from the formation of dust whirls and dust pockets.

The steelworks of Compagnie des Forges et Acieries de la Marine et d'Homecourt, Homecourt, France, reported that by the use of dry-cooled coke more regular and improved action of the furnace was evident, and that trouble caused by hanging of the load in the furnace was greatly reduced. The saving of coke was 4.17 per cent. Dry-cooled coke is of more uniform size. The large pieces, already split on account of the contraction which takes place during the process of distillation, break up to a certain extent when passing through the container. The remaining pieces are of somewhat smaller size, but much stronger and stand further handling better than wet-quenched coke. Therefore, in going down the cupola of the blast furnace, dry-quenched coke does not break up under the heavy load of the charge as is the case with wet-quenched. Formation of dust and breeze pockets in the blast furnace thus is prevented, and a more regular distribution of the blast through the charge is obtained.

It is well known that blast-furnace gas contains a considerable quantity of fine dust, both of ore and fuel, which must be removed by expensive gas-cleaning machinery for most needs; and as dry-quenched coke carries less dust and fines, a considerable reduction in the dust content of the gas produced can be expected. Long-period tests on blast furnaces have been made in German steelworks with coke that was purposely subjected to mechanical handling and then was screened. Best results were obtained with coke of medium and uniform size. Edgar C. Evans, in a lecture in England before the National Federation of Iron and Steel

THE accompanying article is the second and concluding part of a discussion of the dry quenching process for cooling by-product coke. Part I, presented on Page 23 of the April 25 issue of STEEL, described the mechanics of the process and the economics of heat recovery. Part II deals with the use of dry-cooled coke in blast furnaces and gas producers, coke condition, use of fines and other pertinent factors. The author, William O. Renkin, is manager of the Dry Quenching department, Lancaster Iron Works Inc., 370 Lexington avenue, New York.

Manufacturers, showed that after the elimination of 6 per cent of small coke and dust, the capacity of the furnace increased by 20 per cent. This fact is now well known, and the relation between the percentage of fines and furnace capacity has been established.

Results in Fuel Saving

Advantages of dry coke for this work are evident, as dry-quenched coke, being devoid of all water, shows a higher thermal value; therefore, use of dry-quenched coke is equivalent to a saving of fuel.

In blast-furnace operation a considerable amount of cooling water is required for the condensation of steam in the blast gases, which under certain conditions must be filtered and recooled. As the water content of the blast gases reduced accuracies caused by variation in moisture content so common to wet-quenched coke, and therefore, makes possible the accurate records desired.

A letter published in "*Sa Industrialisaziju*" (Industrial Magazine) No. 93, April 4, 1931, Moscow, gives data from a plant which has been operating over four years.

The letter, signed by Schadrin, Berlin, a member of the Commission of the Wostokostal in Germany, was in part as follows:

"Not considering the fact that this plant is of older design, it works with indisputable success, unparalleled by wet quenching. With 1 ton of dry-cooled coke 400 kilograms of steam are produced at pressure up to 14 atmospheres. One of the blast furnaces of the Witkowitz works is operated exclusively with dry-quenched coke, whereby a fuel saving of 3 per cent is effected. The blast furnace operators assured me of this fact and I found it confirmed in the daily records of operation.

"Many experts in the U. S. S. R., as well as the American technical advisors with Magnitostroi, have often asserted that dry-quenched coke is of lower quality than wet-quenched coke. The experience made by the Witkowitz works has convinced me of the contrary. The dry-quenched coke is stronger and contains less breeze and dust.

To Adopt Wet Quenching

"The first plants at Magnitogorsk and Kusnetz will use the wet quenching process. Now it will be necessary to make provisions for a change for the extension plants and to build the coke ovens with a view of adopting the dry-quenching process.

"Considering the tremendous scale of the plants at Magnitogorsk and Kusnetz, the economies effected by dry-quenching are bound to be tremendous too."

The dry quencher installation referred to in this letter has a capacity of cooling 825 tons of coke per day, and is located at the plant of Witkowitzer Bergbau und Eisenhutten Geselschaft, Witkowitz, Czechoslovakia. The steam is generated at 220 pounds gage superheated to a total temperature of 570 degrees Fahr. The steam production is given as 400 kilograms per ton of coke cooled, or approximately 1057 pounds from and at 212 degrees Fahr. The savings given at 3 per cent no doubt refer to their former custom, using a portion of dry-quenched along with wet-quenched coke.

The question of sulphur content has been answered explicitly by analyzing coke at the mines of Mathias Stinnes, Germany. The average of ten samples of coke showed a sulphur content of 0.914 per cent for dry-quenched coke and 0.857 per cent for water-quenched coke, a difference of 0.057 per cent. With water quenching, a desulphurizing action amounting to 6.4 per cent was obtained.

Variation Is Insignificant

This difference is negligible in the practical use of coke, as it is noticeable in the second decimal only. It may be added that only a portion of the sulphur content of the coke is absorbed by the charges—for instance, only 30 per cent in the foundry and only 50 to 60 per cent in the blast furnaces, which further proves the actual insignificance of this small difference. It was shown further in tests at the Stinnes mines that only that part of sulphur was extracted which exists in the coke in the form of sulphides and which after-quenching evaporates as suphureted hydrogen or during combustion as sulphurous acid. It is, however, a well-known fact that in the course of time the vapors from wet-quenching have a marked destructive effect on iron and concrete, aside from the decided hygienic disadvantage and inconveniences which these fumes are likely to cause.

In general, the coke fines are used as boiler-plant fuel by burning on Coxe or other similar-type specially-built stokers. Little successful work has been done along the lines of burning the wet-quenched coke fines for other purposes, owing to the difficulty of packing and choking, although some success has been attained by using small coke in gas producers, but this has not proved very commercial because of the necessity for using only sizes over a ⅝-inch screen.

However, dry-quenched coke fines have proved a satisfactory fuel in gas producers and are being substituted for high-grade bituminous gas coal or larger sizes of salable coke. Using dry coke fines in gas producers gives

Size Comparison of Wet and Dry-Quenched Coke

ROCHESTER PLANT*

Straight High-Volatile Pittsburgh Coal

Screen size	Before Crusher Wet	Before Crusher Dry	After Crusher Wet	After Crusher Dry	
On 2-inch screen	65.7	45.3	35.1	30.4	Egg
On 1-inch screen	23.7	40.2	49.1	51.5	Stove and nut
On ½-inch screen	5.1	6.8	8.6	10.2	Pea
Through ½-inch screen	6.6	6.7	8.3	7.5	Breeze

FLINT PLANT

Blended Coal 55 Per Cent Wharton 45 Per Cent Kentucky King

On 2¾ x 2-inch screen	60.3	51.7	28.3	27.8	Egg
On 1-inch screen	33.3	40.4	56.9	57.1	Stove and nut
On ½-inch screen	3.2	4.8	8.6	9.0	Pea
Through ½-inch screen	3.5	3.1	6.2	6.2	Breeze

*Figures corrected for breeze lost in wet quenching sump and breeze pockets of dry quencher.

the heating effect, due to lowering the flame temperature, it should be eliminated, although sometimes water is added for special ores.

It is also a well-known fact that variations in the percentage of moisture of wet-quenched coke cause difficulties in the blast furnace, or in any other type of furnace where coke is used in steady operation. As dry-quenched coke is free of moisture, there is no variation in fuel quality.

The water contained in the wet-quenched coke effects a precooling of the hot blast gas, but this difficulty has not been observed at any furnace where dry-quenched coke is used. If a special condition be encountered where the absence of the water should cause faulty conditions, it can easily be remedied by sprinkling the coke with water according to requirements at the place where it is used.

It is becoming more and more important to have the accurate weight of coke charged to the blast furnace, and dry quenching eliminates the in-

a gas devoid of illuminants. From coke of the following analysis:

Volatile, per cent	2.80
Fixed carbon, per cent	83.40
Ash, per cent	13.80
Sulphur, per cent	0.73
Heat units, B.t.u. per pound	12,200

gas of the following composition was obtained:

CO, per cent	24.40
CH_4, per cent	0.70
C_2H_4, per cent	0.00
CO_2, per cent	6.30
O_2, per cent	0.10
N_2, per cent	53.90
Heat units, B.t.u. per cubic foot	134

From each pound of coke containing 12,200 B.t.u. a gas containing 10,334 B.t.u. was delivered.

An important item in dry-quenched coke is the absence of discolored pieces so common in wet quenching, caused by incompletely distilled coke or green ovens; thus the dry-quenched coke has a better appearance. Dry-quenched coke has noticeably less cross fracture, no doubt because of the elimination of shock caused by wet quenching.

Little Moisture Absorbed

Wet quenching of coke not only adds moisture, but adds it by impregnating all the cells of the coke structure while it is hot, while dry-quenched coke, being devoid of moisture, can be sprayed when necessary for special use and only show surface moisture. Even when rained on in transit, dry-quenched coke does not absorb moisture near to the extent which hot coke does in wet quenching. This is a notable advantage which should appeal to blast furnace operators and other users of coke in metallurgical operations.

Wet-quenched coke carries a large amount of fines adhering to the larger pieces and although this does not show up in the usual screen tests, yet it is there and becomes freed as soon as the moisture evaporates in both stock bins and furnaces. In some cases the fine coke amounted to a total of over 12 per cent actual in wet-quenched coke and less than 4 per cent total fines in dry-quenched.

Dry-quenched coke does not change its size to any great extent in the blast furnace because of mechanical handling. This complete freedom of the charge in the furnace from newly-formed breeze and small coke has an essential influence upon the regularity of the furnace operation and the pig iron and therefore upon the saving of coke. A further advantages of dry-quenched coke is absence of water content—otherwise varying—which always permits charging into the furnace exactly the amount of carbon required, which renders regularity to the furnace operation and lowers the consumption of coke.

Advantages of dry quenching are notable, experience having shown some very definite facts. One is the use of the sensible heat in the coke to produce approximately 1000 pounds of steam from and at 212 degrees Fahr. at the gage pressure required, including superheat where necessary. This means the production of this steam without additional fuel.

Quality Is Improved

Another advantage is improvement in quality of coke. Since dry-quenched coke was first introduced, many efforts have been made to compare the characteristics of dry-quenched with water-quenched coke. These have all shown that dry quenching produces coke of a more uniform size with greater strength, and when the water-quenched coke has been handled to the same extent as the dry-quenched, the difference in size of the larger pieces is negligible. This is shown clearly in tests.

It is evident that when glowing coke at a temperature of about 1800 degrees Fahr. is suddenly chilled with water, the structure must be affected. Even though the expansion of coke by heat be small, certain stresses must follow this sudden change of temperature. These stresses, because of brittleness of the material, form cracks and splits, which, with the sudden developing of steam, cause breaking apart of the coke. Dry-quenched coke is not subject to these stresses and is reduced in size only by handling.

The mechanical strength and friability of coke are factors of definite interest, as the formation of the coke fines or breeze represents a loss regardless of whether the crumbling occurs in the loading or unloading, by shaking during transit, or in the furnace proper under the weight of the charge. Many investigations of the percentage of dust and coke breeze have determined the superiority of dry-quenched coke.

Freight Saving Possible

Dry quenching produces a coke devoid of moisture, which insures cleaner coke, that is, less fines and dust adhering to the large pieces. Better screening and preparation of coke is insured by dry quenching, and this is an important difference in its favor. When coke is to be transported, a reduction in moisture content of only 5 per cent frequently means a saving in freight of 50 cents per ton. Dry-quenched coke permits accurate weighing of the coke burden in metallurgical furnace operations, as well as insuring cleaner and more uniform operation.

When using wet-quenched coke in producer operation, the fuel sizes range through a 1-inch mesh and over a ⅝-inch mesh screen. Coke below the latter screen is considered as breeze and usable only as a boiler fuel. It has been found practical, because of absence of moisture in dry-quenched coke and better screening conditions, to reduce these sizes to through ⅞-inch and over 3/16-inch mesh and also obtain a saving in the quantity of fuel used of the larger sizes. The reduction of fuel used amounts to approximately 10 pounds of the carbon burned per ton of coal carbonized. The largest single factor is represented by the reduction in the unused quantity of breeze produced.

Dry quenching insures a higher sale value for coke fines, as they form a satisfactory substitute for bituminous coal in producer-gas plants. This is true especially at coke plants operating in connection with open-hearth and steel plants, as well as for gas producers in connection with open-hearth and steel plant and also for gas producers in connection with the by-product coke ovens, as the dry-coke-fines producer gas takes the place of by-product coke-oven gas in firing the ovens.

Dry quenching eliminates pumping of water necessary for all wet-quenching stations, as well as the dust-laden vapor clouds from wet-quencher stacks which are so destructive to surroundings and unpleasant for plant personnel. Reduction in maintenance as well as increased life of steel structures are other items to be given consideration.

Other Cost Reductions

Dry quenching may effect a reduction in labor cost for frequently, depending on plant layout, one car can do the work which with wet quenching requires two cars. There will also be a reduction in cost of conveyor operation, as the elimination of water insures more continuous operation and lower maintenance cost.

One of the items of special interest to coke manufacturers is size of coke produced, and as the Rochester dry-quenching installations apparently handled the coke more roughly than do the usual water-quenching methods, improvements in plant design were developed that seem to have helped the situation.

While plants of new design have not been in operation suffcient time to provide definite, conclusive data, results so far seem to indicate a noticeable improvement. Some comparable tests have been run on wet and dry-quenched coke with the following results:

	Wet quenched, per cent	Dry quenched, per cent
Over 2¾ x 2-inch screen	63.6	55.3
Through above screen	11.5	15.5
Over 2 x 2-inch screen	11.5	11.5
Through above screen	19.4	25.6
Over ¾ x ¾-inch screen	19.4	25.6
Through above screen	5.5	3.6

From this it will be seen that the quantity of fines through a ¾-inch screen is less in dry-quenched than

in water-quenched coke. This bears out the results of tests run by C. C. Russell in 1927 at Rochester. Shatter tests carried on at the same time as the screen tests showed the following comparison:

Method of quenching	Wet quenched, per cent	Dry quenched, per cent
Over 2 x 2-inch screen....	50.0	66.0
Through above screen....	39.5	26.0
Over ¾ x ¾-inch screen	39.5	26.0
Through above screen....	10.5	8.0

The table on page 32 shows the comparison in sizes of wet-quenched and dry-quenched coke at the Rochester and Flint plants. It has been noted that dry-quenched coke has less cross fracture than the wet-quenched and there are practically no fines adhering to the larger pieces as is the case with the wet-quenched coke.

In conclusion, it may be said that after years of exhaustive study of the process of dry quenching and its application to coke producing plants of this country, there are no reasons or conditions that make its acceptance an experiment. It has proved a benefit to every phase of operation. It produces a coke that is dry and physically strong and the process does not increase the percentage of breeze produced. The smaller sizes of coke produced are better because of the absence of moisture and the breeze becomes an asset instead of a liability.

With our present need for fuels conservation, it would seem that the waste and discomfort caused by water quenching of coke are economically indefensible.

Provides Larger Diameter Corrugated Pipe by Multi-Plate Construction

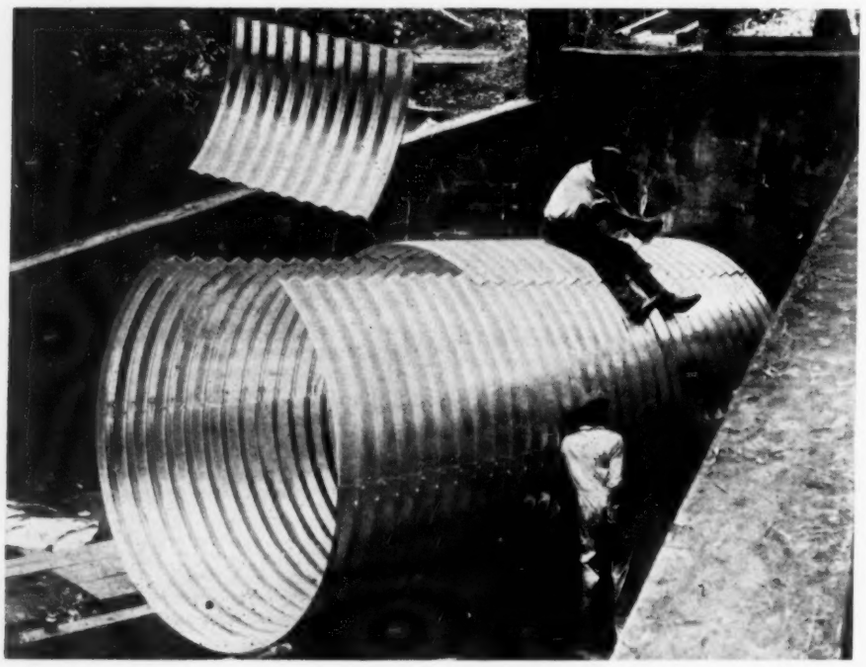
TO MEET the need for larger and stronger drainage structures, the Armco Culvert Manufacturers' association, Middletown, O., has developed a multi-plate pipe which is believed to represent the first change in design of corrugated metal pipe in a decade. The new product is a super-corrugated pipe of balanced design and is made of plates heavier than previously used in this type of construction.

As may be observed from the accompanying illustration, it is similar in appearance to the usual corrugated pipe, except that it is made of heavy plates strengthened with larger corrugations—6 inches from crest to crest and 1½ inches deep. The plates, galvanized and corrugated in the factory, are rolled into circular segments, shipped nested, and assembled in the field by bolting them together. The pipe is manufactured in diameters varying from 90 inches to 10 feet and over.

In bolting the plates together, the circumferential joints are broken by staggering the plates so that a continuous pipe in any multiple of 5 feet can be made without a circumferential seam. All the plates are 10 feet long except that half of the plates at each end are 5 feet long, or in the case of diameters requiring an odd number of plates when they are 7½ feet in length.

The new multi-plate pipe is claimed to possess all the advantages of corrugated metal pipe and, in addition, greater strength because of heavier plates with wider and deeper corrugations; greater durability because of heavier gage ingot iron base metal plus a heavy coating of pure zinc; greater economy because heavy-gage plates may be used in the bottom where the greatest wear comes and lighter gage plates for the remainder of the periphery, which gives balanced design; and greater adaptability to jacking because of the method of construction which permits extension without the use of bands or matching holes for riveting.

The pipe is designed not only for durability, but for economical production and erection as well. It is particularly adapted for large culvert jobs, bridge replacements, storm sewers, stream inclosures, and the like.



Erecting a 90-inch section of multi-plate corrugated pipe for arch replacement under an Illinois Central railroad bridge in Jackson, Miss.

Papers for Gear Makers Meeting Are Announced

The American Gear Manufacturer's association will hold its Sixteenth annual meeting in Hotel Statler, Cleveland, May 12-13. Papers to be presented at the various business and technical sessions have been announced as follows:

"Low Pressure Selling," by J. Harper Jackson, Pittsburgh Gear & Machine Co., Pittsburgh.

"Business Ethics as Affecting Gears," by E. S. Sawtelle, Tool Steel Gear & Pinion Co., Cincinnati.

"Overhead Control as Part of Standard Costs," by H. N. Mathias, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Apprenticeship and Its Relation to the National Metal Trades Association," by Harold S. Falk, Falk Corp., Milwaukee.

"New Light on the Strength of Gear Teeth," by A. B. Cox.

"Design and Use of Worm Gear Hobs," by L. R. Mayo, Brown & Sharpe Mfg. Co., Providence, R. I.

"The Gear Industry in North Carolina," by Richard Ferguson, Ferguson Gear Co. Inc., Gastonia, N. C.

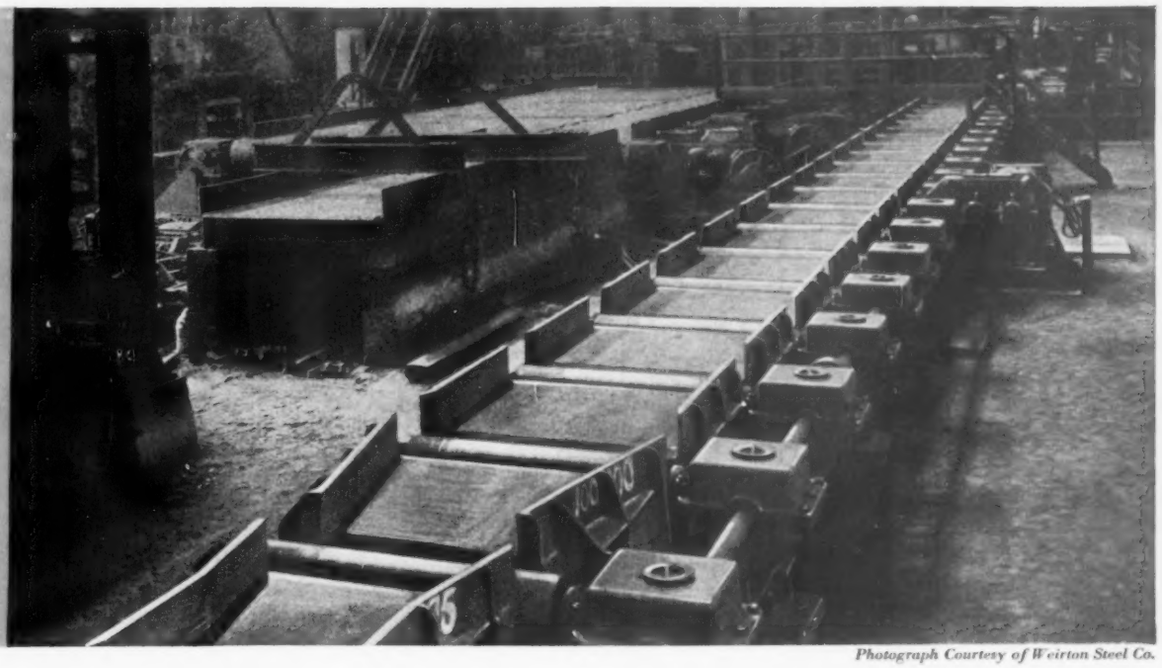
Revamped Boiler Plants Described in Article

Combustion Engineering Corp., 200 Madison avenue, New York, has available for distribution copies of an article, "Modernizing the Old Boiler Plant," by Joseph Breslove, consulting engineer, Pittsburgh.

• POWER LEAKS

CAN BE STOPPED

THROUGH PROPER LUBRICATION OF AUXILIARY EQUIPMENT



Photograph Courtesy of Weirton Steel Co.

Shears, tables of all sorts, conveyors, manipulators, etc.—each in itself a relatively small consumer of power—in the aggregate create an important load for your power plant to carry. Preventing power leaks here will materially reduce operation costs.

It is not enough that equipment of this kind be lubricated. Real savings can only be made by proper lubrication with lubricants especially prepared for each use. For instance, stiffening of some lubricants in table drives—because of cold weather and mill shut-downs—causes increased loads, so great at times that equipment cannot be turned. For this purpose, the proper lubricant should combine low cold test with sufficiently high melting point to assure satisfactory operation under both heat and cold, and, at the same time, have low internal friction.

Proper lubrication prolongs the life of machinery, reduces maintenance costs, and increases production. Years of exhaustive studies have enabled our engineers to develop a line of lubricants to meet requirements of all types of steel mill equipment. If you are interested in greater operating economy, they will gladly place their experience at your disposal.

PENNSYLVANIA LUBRICATING COMPANY

PITTSBURGH, PENNSYLVANIA

1885—*Lubrication in the Steel Industry*—1932

A Subsidiary of the Standard Oil Company (N. J.)

Engineers in Agreement on Ductility in Weld Metal

INCREASED use of machine gas welding in the manufacture of tubing for automobiles, especially for driveshafts, in late models developed this year, was stressed by J. L. Anderson, Air Reduction Co., New York, on the closing day of the three-day meeting of the American Welding society in New York, April 27-29.

This shaft tubing must meet severe stresses up to 90,000 pounds per square inch. While procedure in machine gas welding is entirely feasible for other automobile welding operations, and is being successfully completed in some, cost of jigs and fixtures tends toward prevention of its use in others. Strength, ductility and speed of operation make this welding method desirable in manufacturing automobile tubing.

Condemns Changing Procedure

In operations of machine gas welding where best results may not be attainable because of steel or metal specifications, Mr. Anderson's view was that such remedial adjustments would be better made at the mill even at an increase per ton than to attempt changes in welding procedure and established, fixed design of the welding machine. Defects are often brought out in machine welding that may not be noticed in hand welding, the greater speed and heats in the machine operation bringing them out.

Mr. Anderson stressed design and heat control, stating that heat application which is the basis for all welding sets up a movement of metal which the operator must control. This distortion must be considered in the design and, if properly controlled, may indeed be a factor in improving the weld. More economical operation is attained by greater amount of heat at the points of weld as it may mean increase in speed. On a metal of given thickness, Mr. Anderson estimated speed in machine welding as 20 to 1 over hand operation on straight seam welding. On lighter gages 20 feet and better per minute are easily reached. Preheating serves to increase speeds and reduces costs in gas. More heat is also required when mechanical pressure is not employed.

P. W. Fassler, consulting resistance welding engineer, discussed modern spot and relief or projection welders, stating that past experiences in similar applications is the best guide the designer has in anticipating electrical requirements of a machine for some particular job.

W. P. Gavit, United Engineers & Constructors Inc., New York, described the welded pipe installation of a power plant at Burlington, N. J., the line operating under a pressure of 730 pounds per square inch and at a temperature of 860 degrees Fahr., welded joints first being subjected to treatment in an annealing furnace before final installation.

A review of recent progress and suggested improvements in technique were contained in a paper, "New Aspects in Pipe Welding," by W. P. Curley, New York district manager, Tube Turns Inc.

A progressive report of the structural steel welding committee submitted by O. E. Hovey, consulting engineer, American Bridge Co., was accepted with the recommendations made. A series of flame cut weld test specimens were shown, results being attained from fillet welds on open-hearth structural, copper bearing and silicon steels. The committee plans early tests for variable stress and so-called impact tests for structural steel welding.

Symposium on Ductility

A remarkable unanimity of opinion and experience in regard to the value of ductility in weld metal and parent metal was revealed in a symposium on ductility in welds. E. R. Fish, chief engineer boiler division, Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn., said: "It is practically impossible to so construct a vessel of any sort that the stresses are of the exact magnitude and distribution the designer intended." When stresses go above the elastic limit, he said, there is a slight stretching and a redistribution of stresses that safeguards the integrity of the structure. "If the yield point is well below the ultimate strength of the material this readjustment is readily made and is highly advantageous," said Mr. Fish, "but in brittle material, where the yield point is near the ultimate, a fracture may easily be started if, indeed, immediate failure does not occur."

Everett Chapman, director of research, Lukenweld Inc., Coatesville, Pa., declared that the term ductility does not cover the matter entirely—high tensile, high fatigue limit, high corrosion fatigue and high elastic limit all are wanted in parent and weld metal. To get the physical characteristics required for good welded structures, Mr. Chapman said, clean steel is needed; the required characteristics cannot be obtained when oxidized steel is used.

C. L. Waddell, welding engineer, Worthington Pump & Machinery Corp., Harrison, N. J., brought in a subject which was emphasized by a number of speakers, namely, the importance of correct design. "That ductility is an important physical characteristic in welds cannot be denied," said Mr. Waddell, "the greatest strides in the welding industry have been made since changes in electrodes and procedure have made it possible to produce ductile welds." But ductility is not a panacea, and a vessel or structure fabricated of the best materials available, may fail in service unless the design is correct, he stated.

Weld Metal Also Ductile

Prof. D. Rosenthal, University of Brussels, Belgium, attending the meeting, contributed a notable paper to the symposium. He submitted copious data to prove that it is not sufficient for the parent metal to possess the required ductility. To prevent overstressing, both the parent and deposited metals must be ductile, he said; the more ductile they are, the safer will be the structure.

A comprehensive paper on the weld ductility requirements for welded pressure piping was presented by T. W. Greene, development welding engineer, Linde Air Products Co., New York. His paper showed how sound practice in pipe line welding has brought sound results, and paved the way for the conclusion that ductility of 10 to 12 per cent is sufficient to meet all service requirements of pressure piping.

C. J. Holslag, Electric Arc Cutting & Welding Co., Newark, N. J., mentioned a welded joint made of 4-inch steel. The X-ray showed a hole, so a section of the weld was removed, the hole found and filled in and the weld again built up. Mr. Holslag declared it would have been better to leave the hole, for in this case the cure was worse than the disease. He favored ductility not to exceed 10 to 15 per cent, and the least amount of penetration possible in welds.

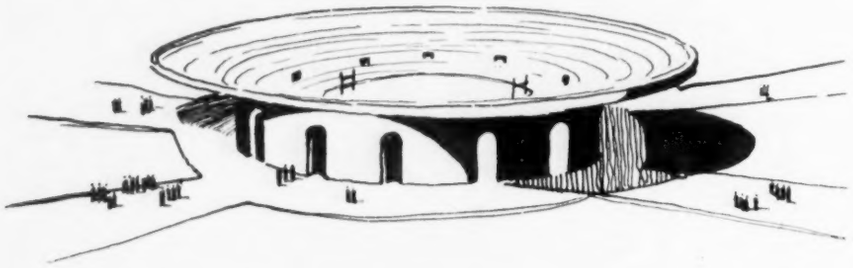
Officers of the American Bureau of Welding, the research division of the society, were re-elected as follows: Director, C. A. Adams, Lawrence professor of engineering, Harvard university, Cambridge, Mass.; first vice director, H. M. Hobart, consulting engineer, General Electric Co., Schenectady, N. Y.; second vice director, J. H. Critchett, head of research, Union Carbide & Carbon Corp., New York; and secretary, W. Spraragen, 33 West Thirty-ninth street, New York.

Between the world's most ancient industry—agriculture—and the design and building of the modern steel mill, there is close cooperation.
Steel, rolled on Morgan mills, meets its great reliability test in the workings of the marvellous machines for harvesting in the grain fields of the world.
MORGAN CONSTRUCTION COMPANY
Worcester, Mass., U. S. A.
European Representatives
International Construction Company, London; Davy Brothers, Sheffield
MORGAN
McCORMICK-DEERING
MORGAN
WORCESTER
ENGINEERS AND MANUFACTURERS
ROLLING MILLS
GAS PRODUCERS
WIRE MACHINERY
COMBUSTION CONTROLS

Designer Predicts Radically Different Age of Steel

A NEW but radically different age of steel and a world-wide revolution in the shapes of practically all commercial and utilitarian objects as we know them may be expected with the era of prosperity which inevitably will follow the present long-continued state of industrial uncertainty. This is the opinion expressed by Henry Dreyfuss, 580 Fifth avenue, New York, well-known authority on industrial design and stage settings.

In the industrial field, in which he is now specializing, Mr. Dreyfuss



has been responsible for revolutionary design changes in a great variety of products ranging from alarm clocks to boudoir lamps and from hinges for bank doors to motor truck cabs.

More Steel Will Be Used

"When business resumes its normal march in the near future," says Mr. Dreyfuss, "it will show no interruption in the steel age which began two decades ago. The use of steel will be expanded enormously as its utility and other advantages for articles now made of other materials are discovered. Steel is surely coming for household furniture, for use both indoors and out. It is coming for thousands of articles of every day use—hair brushes, mirrors, bathroom equipment, kitchen utensils, nursery and playroom and gymnasium fittings, office furniture and fixtures and countless other items.

"New York and other cities here and abroad will see hundreds of enormous new buildings with skins and bones of steel, and they will be beautiful. This movement will spread to homes and to public and semi-public buildings—museums, libraries, hospitals, theaters, sports stadia, churches."

According to Mr. Dreyfuss, practically all production of automobiles will be entirely of steel in the interests of safety, silence, beauty, efficiency, economy of manufacture, operation and repair. Truck bodies will be of steel, as will all automobile wheels. Power boats of all types and sizes, built of metal, are coming. Steel will go into airplanes, and dirigibles of metal already have been built.

The steel to be used for many of these things, however, will be different, says the designer. It will consist of alloys, of combinations, some already known and employed successfully, others still unborn in the laboratories. These alloys will be cunningly, economically and beautifully adjusted to the results desired, namely, resistance to rust, corrosion, wear, weather, heat, cold, expansion, contraction, vibration, tearing in stamping operations, etc.

The keynote of the new design of everything, from buildings to bottles and from adding machines and telephones to automatic cow milkers, will be saleability. This, of course, will be based upon unconscious public demand, which will be encouraged carefully and experimentally, for newer, more pleasing and more efficient forms.

The passenger car and truck, the street car, the railroad locomotives and car, everything that floats including ocean liners, ferryboats and scows, will be truly streamlined. In other words, they will follow more nearly the lines of speed in nature, in order to reduce the power destroying, efficiency reducing front wind resistance and rear vacuum of our present forms. Mr. Dreyfuss' conception of streamlining of motor vehicles is to be seen in two illustrations below, one a roadster and the other a bus.

In conclusion, the designer states that in steel, amazing color and form effects will be obtained by combinations of rough and polishing surfaces, with and without actual color.

Porcelain Enamel Group To Hold Cleveland Meeting

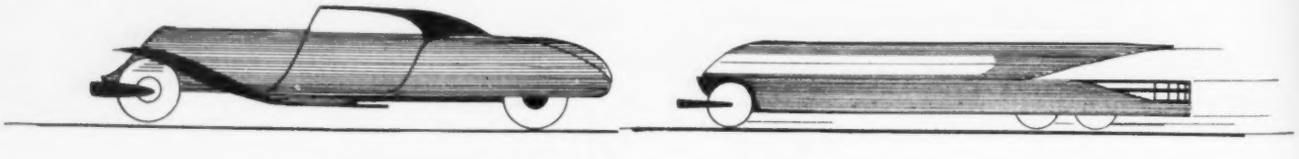
The Porcelain Enamel institute, organized in 1930 to further the use of porcelain enameled products, will hold its second annual meeting in Hotel Cleveland, Cleveland, May 26. Morning and afternoon sessions will be devoted to business matters and presentation of addresses.

Among topics to be discussed and the speakers are: "What the Institute Is Doing to Further the Use of Porcelain Enamel," by George P. MacKnight, publicity director of the institute; "Use of Porcelain Enamel in the Home," by Bennett Chapple, American Rolling Mill Co., Middletown, O.; "Porcelain Enamel's Part in the Use of Color for Decoration," by R. G. Cowan, Ferro Enamel Corp., Cleveland; "Use of Porcelain Enamel for Exterior Building Purposes," by Charles B. Rowley, architect, Cleveland; "Use of Friezes in Modern Architecture." by William Hogenson, Chicago Vitreous Enamel Product Co., Chicago; and "Spandrels and Mullions of Porcelain Enamel for Architecture," by W. Russell Greer, Porcelain Enamel & Mfg. Co., Baltimore.

Headquarters of the institute are at 612 North Michigan avenue, Chicago, and present officers are: President, R. A. Weaver, Ferro Enamel Corp., Cleveland; vice president and secretary, Rudolf W. Staud, Benjamin Electric Mfg. Co., Chicago; and treasurer, William Hogenson, Chicago Vitreous Enamel Product Co., Chicago. New officers will be elected at the meeting.

Steel Plates Considered For Guard Rails

A new use for steel plates, which would involve large tonnages of this product, is seen in the fact that the highway departments of New York and Pennsylvania are considering the adoption of steel plates as guard rails at curves and other dangerous places along state highways. The plan is



to use plates 12 inches wide, supported on 6-inch H-columns. The plan is also to use two strands of these plates, one above the other, or one strand of plate surmounted by two strands of steel wire rope. At the present time these guard rails are largely of steel wire rope mounted on wooden posts.

Some idea of the extent to which plate consumption would be involved is indicated by the fact that steel plate 12 inches wide and 3/16-inch thick weighs 7.65 pounds per lineal foot. The plates would be painted to prevent them from rusting.

One of the principal factors in the consideration being given to the use of plates in this way is that of safety. Highway officials say that the hubs of automobiles and trucks striking these plates would slip along them, automatically pushing the vehicle back on the road, whereas a vehicle which strikes a wooden post in one of the existing guard rails is almost certain to sustain damage more or less serious.

Issues New Bibliography On Standardization

The bureau of standards, Washington, has published as miscellaneous publication No. 136 a "Bibliography on Standardization." This bibliography comprises references to the general literature on file in the library of congress. Care was taken to omit citations to the more specialized literature on standardization of specific commodities.

Copies of the bulletin can be obtained by addressing the government printing office, Washington.

Ancient Blast Furnace Produced Iron For Munitions in Napoleonic Wars

AN American manufacturer, interested in the romance and legend of the early days of the iron and steel industry, recently unearthed some interesting history of a long-abandoned 179-year-old blast furnace plant in the Scottish highlands that produced iron for the munitions used in the Napoleonic wars. J. Hall Taylor, president of the Taylor Forge & Iron Works, Chicago, learned some time ago of the existence of an old map showing the location of some iron works on the banks of Loch Etive, near Taynuilt, Scotland.

His curiosity aroused, Mr. Taylor through a friend in Edinburgh was able to obtain photographs and details concerning the well preserved remnants of this early furnace. The furnace was built about 1753 at a village which then was called Bonawe, this site having been chosen because of the surrounding wooded area and a large number of charcoal burning pits, where charcoal was burned and prepared for blast furnaces. The ore is supposed to have been brought by ship from Cumberland.

Fig. 2 shows the blast furnace enclosed in a square building, although the furnace itself is circular, increasing in diameter as it descends from the chimney to the mouth at the bottom. The ironwork over the tap hole of the furnace has cast on it the letters "Bonawe 1753," as shown in Fig. 3. At the side of the furnace, Fig. 1, is the old water wheel which operated the blowing equipment.

The ironworks is at the top of a steep slope on which is another building, on a level with the top of the furnace, from which the raw materials were charged, so that there was little or no hoisting and lifting after the materials were brought from the edge of the *loch* to the upper ground by dirt road. A stone shaft on a hill near the furnace bears a plaque stating that the monument was erected by the workmen of Bonawe furnace to the memory of Admiral Nelson, thus substantiating the theory that the iron produced there was used in the wars with France.

Mr. Taylor also found a brief description of the ancient furnace plant in *The Beauties of Scotland*, by Forsyth (1808), which states that "about 1753 a company from Lancashire erected a furnace for casting pig iron here, and obtained a long lease of several farms for rearing wood and grazing their work horses. A part of the wood is cut down every year and converted into charcoal, with which they make extremely pure iron."

It is explained further that the furnace works had their origin in the foundation of the York Building Co., started in the latter part of the reign of Charles II by a firm of "Undertakers," to supply pipe for water mains in London.

FIG. 1 (below)—Water wheel which operated blowing engines. Fig. 2 (right)—General view of 179-year old blast furnace in Scottish highlands

FIG. 3 (above)—The phrase "Bonawe 1753" is still discernible in the ironwork over the tap-hole of the furnace

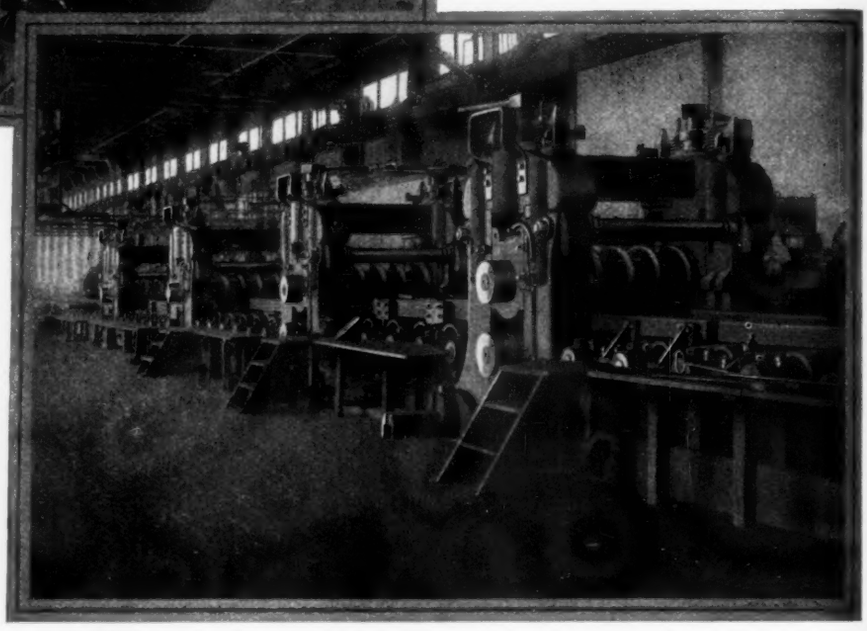
MORGAN ENGINEERING (ME Co.) MEANS MILL EFFICIENCY

MORGAN · CONTINUOUS · MILLS

MORGAN 19″ 6-STAND CONTINUOUS BAR *and* BILLET MILL

Designed and built complete for the Continental Steel Corporation, Kokomo, Indiana

Among various products which can be rolled on this mill are 12″ sheet bar and 1¾″ square billets.



24″ 4-STAND CONTINUOUS ROUGHING MILL *for* AXLE PLANT

•

THIS installation was built complete, including four stands with bevel gear drive, Approach and Runout Tables with switches and pockets for serving six Morgan 7500 lb. Axle Forging Hammers.

Write for Bulletin No. 16

4

THE MORGAN ENGINEERING COMPANY

NEW YORK 25 BROADWAY

ALLIANCE, OHIO, U. S. A.

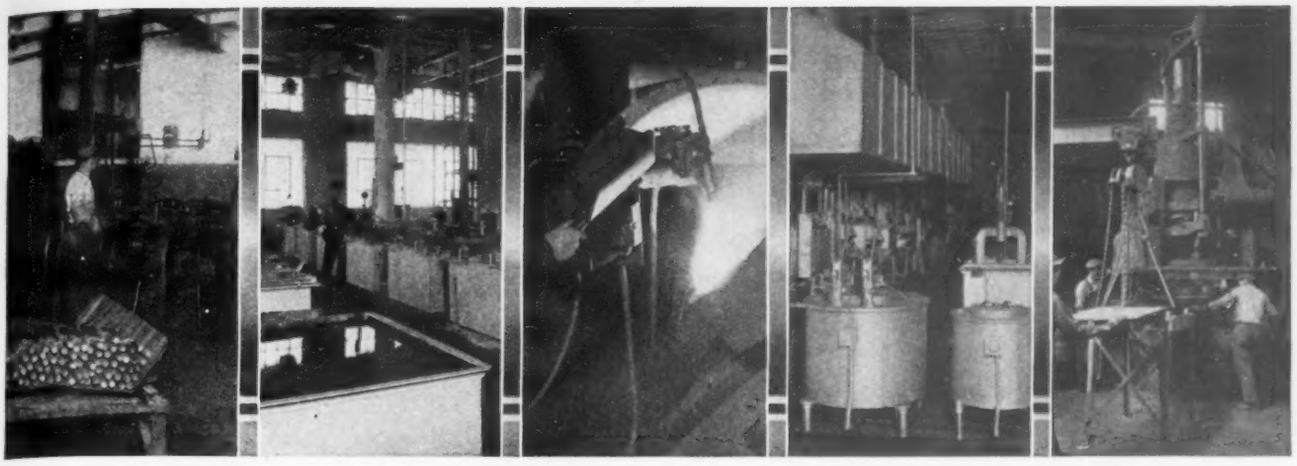
PITTSBURGH 1420 OLIVER BLDG.

MORGAN DESIGNS AND BUILDS

Blooming Mills · Plate Mills
Structural Mills
Continuous Mills
Rod and Bar Mills

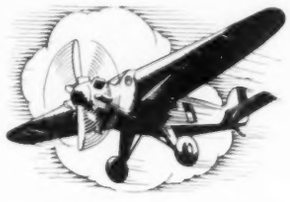
Electric Traveling Cranes
Steam Hydraulic Forging Presses
Steam Hammers

DESIGNERS · MANUFACTURERS · CONTRACTORS



MAKING THE MOST OF STEEL

CASTING of the chrome-nickel series of alloys for resistance grids in electric furnaces and industrial heating encounters difficulties in the production of uniform and sound castings. A radiograph of a resistance grid recently disclosed that certain sections of the grid were decidedly porous. This reduced the cross-section, causing the grid to burn out rapidly as a result of current density at those points. It was found practically impossible to observe the difference in temperature between those points and the sound metal by the ordinary method of testing through overloading the grid. The unit, however, deteriorated more rapidly at those points, and thus was weakened. The deterioration, of course, shortens the life of the resistance grid, making it necessary to shut down the furnace for replacement, causing expensive delay. X-ray inspections of the castings have been found useful in eliminating these premature deteriorations of the units.



A NEW use for hard surfacing has been found in airplane tail skids. These skids are exposed to severe abrasion when a plane lands and the life of an unprotected skid is from 3 to 40 landings. Hard faced skids are said to average from 400 to 1000 landings. The United States army is adopting this type of skid for its planes.

$ $ $

A campaign for the sale of complete electrified kitchens on the installment plan is being initiated by a large electrical manufacturing company. These rooms, which sell for as low as $4 a week, include a dish washer, ventilator, special lighting, clock, refrigerator and range. Total cost is between $700 and $800, and payment can be arranged over a period as long as three years. Steel, of course, plays a prominent part in the appliances.

$ $ $

Strip steel is being blanked, punched and formed into chain sprockets for motorcycles. Of proper analysis, it takes hardening and is easily plated and polished for appearance. This material is also being used for agricultural reaper blade sections.

$ $ $

A large power shovel, engaged in construction work in the East, was rendered temporarily useless when the teeth on its rollers became worn to knife-like edges. The purchase of new rollers involved undesirable expense and delay, so it was decided to build up the rollers by arc welding additional metal to them. Before welding the rollers weighed approximately 750 pounds each; when they left the shop they weighed nearly 800 pounds apiece. Thus approximately 50 pounds of metal was added to each roller, at an estimated welding cost of approximately $10 per roller.

$ $ $

By salvaging metal from ashes produced in the scrap incinerator, a large electrical equipment manufacturer saves approximately $16,000 a year. The ashes are pulverized in a ball mill and the larger pieces of metal pass out and over a magnetic separator. The finer material passes over an inclined longitudinally grooved concentrating table which has a stream of water flowing at right angles to the movement of material. The metal, being heavier than the ash, slides down the bottom of the grooves and falls off the lower end of the table. The ash is washed off the side of the table, is pumped through a dewatering cone and discharged to a dump car. About 100,000 pounds of ashes are ground and washed each month and from 20,000 to 25,000 pounds of metal is recovered.

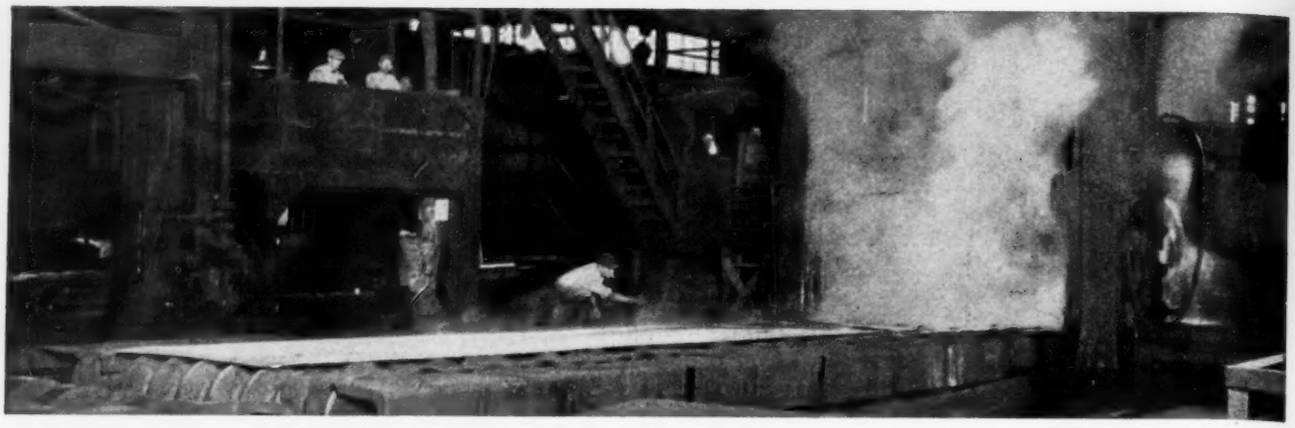
$ $ $

By using a nickel cast iron containing 1.50 per cent nickel, 0.50 per cent chromium and 1.25 per cent silicon in tuyere castings, a southern power plant has saved almost $1000 a month on stoker replacement castings.

VACUUM tanks are said to be more difficult to fabricate by welding than are pressure vessels. Tanks for this service have been made 15 feet long, 6 feet 3 inches diameter with a steel shell ⅜ inch thick. No stiffeners either internal or external were used and these tanks are in continual service holding a vacuum for several hours without appreciable drop showing on the gage. Some such tanks are required for work up to 30 inches of vacuum.

$ $ $

It is now possible to deposit rubber on steel so that it will adhere strongly and the process is being used to put a protecting cover of rubber on pickling baskets for use where corrosion is unusually severe. This type of basket has great strength and is suitable for muriatic or hydrochloric acid pickling.



PROGRESS IN STEELMAKING

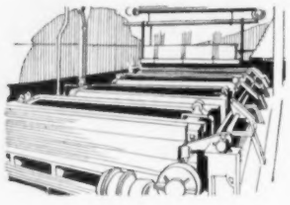
DEVELOPMENT of a 9-inch straight clay and silica brick, 3 inches thick, now affords the laying up of 20 per cent more furnace lining area per mason per hour than when standard 9-inch straights, 2½ inches thick, are used.

♦ ♦ ♦

An alloy containing 10 per cent thallium, 20 per cent tin and 70 per cent lead is resistant to the corrosive action of mixtures of sulphuric, nitric and hydrochloric acids. Recent experiments indicate that the addition of thallium to lead-base alloys markedly improves their resistance to deformation.

♦ ♦ ♦

On a 14-inch skelp mill in the Pittsburgh district difficulty was encountered when grease was used to lubricate the roller bearings on the edging rolls. This was remedied by piping up the bearings for oil.



INSTALLING pickling and washing tanks on piers a few feet above the main floor, afforded a Detroit company an effective means for ventilating its pickling department. Hot air forced in the compartment between the main and working floors rises around the tanks and forces the acid fumes through ventilators in the roof.

♦ ♦ ♦

Recent tests disclose that one of the prime requisites to the successful use of blast furnace gas in regenerative open-hearth furnaces is that the air and fuel be mixed in a turbulant manner to secure a thorough and complete commingling. In the case of mixed gas, three fluids all at different velocities, enter the combustion chamber. Prompt and thorough mixing will result if the ports are kept of relatively small area and provisions made to interrupt the stream line flow.

INCREASING the span of an open-hearth roof and leaving the skew-back dimensions unchanged materially affects the life of the roof on account of insufficient strength of construction, according to recent comments of an open-hearth superintendent.

♦ ♦ ♦

Geared motors equipped with built-in speed changing units have been developed which permit shifting to any one of four speeds while the motor is under maximum load, merely by operating a lever.

♦ ♦ ♦

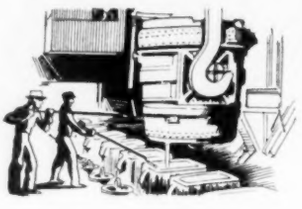
Breakage of furnace lining brick in transit to steel plants is prevented by one producer who anchors them on skid platforms with steel strapping. Handling costs also are reduced materially.

♦ ♦ ♦

Recently designed feeder and catcher tables for use with the conventional-type hot sheet mill afford plenty of space for changing rolls, applying an electric roll heater or for any other operation on the mill proper, and enable the mill to deliver increased tonnage at lower cost and with less manual labor. Both units are controlled by a single lever which, when placed in the automatic position, permits the tables to function continuously. Side matching is accomplished by automatically-operated guides and end matching by the previously mentioned lever. When operated in conjunction with pack heating furnaces and other modern auxiliaries, this equipment is claimed to produce double the production of the old-style hand sheet mill at an approximate saving of $5 a ton.

♦ ♦ ♦

Elimination of slipping or creeping of contact faces of magnetic friction clutches used on various type rolling mills for securing uniform screwdown movement, is afforded by the development of a new type magnetic clutch coupling. The contact face is made with V-tooth serrations, 3-degree pitch and developed on a cone. Attraction of the armature element to the magnetic element results in a uniform engagement over the clutch face.

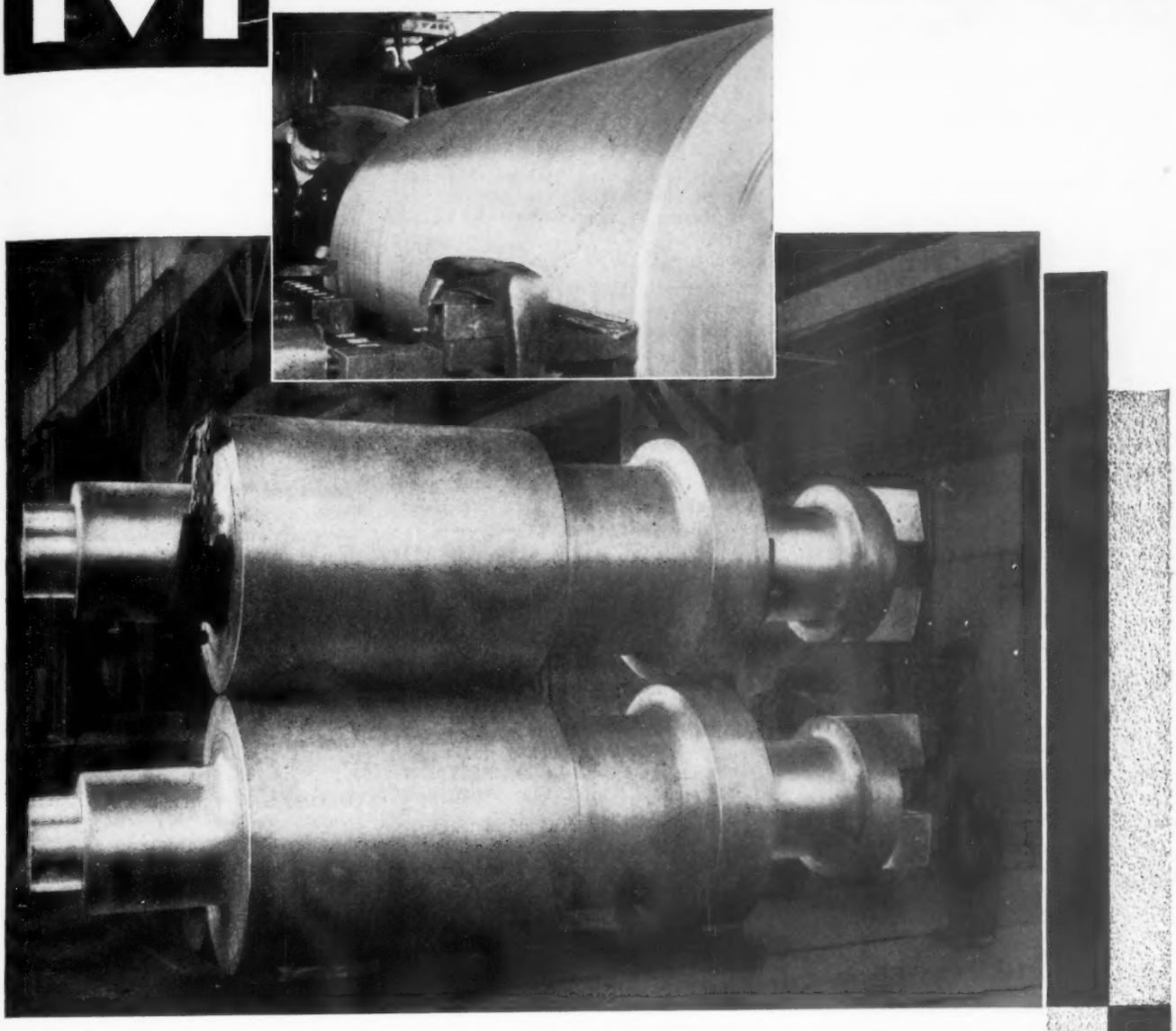


UNIFORM ingot surface is obtained at an open-hearth shop in Pennsylvania by maintaining the rate of rise in the mold between 10 and 12 inches a minute when pouring both open and killed steels. For the latter type steels a 10-inch rise is more effective.

♦ ♦ ♦

An insert of pure molybdenum metal brazed between a steel shank and a tantalum carbide cutting tip has been found to absorb such strains as may occur under operating conditions between the cutting tip and the shank.

MESTA ROLLS



Chilled Rolls Alloy Iron Chilled Grain Rolls
Alloy Iron Fine Grain Rolls Sand Rolls
Mesta Hardened Rolls Mesta Hardened Chilled Rolls
Carbon Steel Rolls Alloy Steel Rolls
Mesta Special Alloy Steel Rolls Heat Treated

MESTA MACHINE COMPANY

Pittsburgh, Pa., U. S. A.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Gas Carburizer

Continuous gas carburizing furnace used to case harden steering worms, by E. A. Thomas, in Automotive Industries, April 30, 1932, p. 652, 2½ pp., 4 illusts.

This furnace, recently installed at the Newcastle, Ind., plant of Chrysler Corp. handles 120 worms and sectors per hour and has been in operation for three months. The furnace is both over and under fired with gas and contains an alloy muffle composed of flanged and bolted sections, which is anchored at the discharge end and floats toward the opposite end on alloy rollers supported by alloy cross supports.

Carburizing trays are pushed through the muffle on two sets of rollers by a suitable device, trays and carburizing gas traveling in the same direction. At each end of the muffle is an air actuated valve which acts as a seal. The first two muffle sections, which comprise the deposition zone, are composed of a straight chromium iron; all other sections are of a conventional nickel-chromium iron analysis. Elimination of distortion and uniformity of case depth are outstanding advantages of the installation.

—STEEL, 5-9-32

Intergranular Corrosion

Cause and cure of intergranular corrosion in austenitic steels, by John A. Mathews, Journal of the American Welding Society, April 1932, p. 23, 5 pp., 5 illusts.

When austenitic chrome-nickel steels are reheated for any purpose between temperatures of 1000 and 1500 degrees Fahr. a change takes place in their structure which renders them subject to attack by many electrolytes, this attack taking place between the grains so that after long duration the material becomes weak and brittle and in some cases may even be crumbled with the fingers. The usual explanation of this intergranular corrosion is that at the embrittling temperatures, in the above mentioned range, chromium carbides are thrown out of solid solution in the austenite and precipitate at the grain boundaries.

This results in a local impoverishment of chromium around the carbide particles, which, in addition to the difference in potential in adjacent areas due to varying chromium content, makes corrosion possible.

Three remedies are discussed: First, use of an alloy of lowest possible carbon content, preferably below 0.07 per cent; second, high heat treatment after the carbide precipitation, usually from 1800 degrees Fahr. upward; and third, addition of certain other elments to the chrome-nickel steel, such as titanium, silicon, vanadium, molybdenum and tungsten, which have been found to retard intergranular susceptibility. Much laboratory effort has been expended on this problem of corrosion, and numerous investigations are still in process.

—STEEL, 5-9-32

Rustproofing

Bonderizing as applied to automotive finishing in the new California Ford plant, by J. B. Nealey in Industrial Gas, May 1932, p. 14, 2½ pp., 6 illusts.

The assembly plant of the Ford Motor Co., recently erected at Long Beach, Calif., has a pressed steel division, with presses running up to 105 tons, where such parts as fenders, fender wells, running boards, dust shields, hoods, etc., are stamped out, later to be distributed to all assembly plants on the Pacific coast.

The main building fronts on a harbor and is served by two parallel spurs from a railroad, both of which run along the north side of the building, one inside and one outside. Overhead conveyors distribute stock and parts all over the plant from here. Equipment for finishing, ovens and the like, takes up more than half the space in this plant and gas is the fuel used throughout. Fenders and similar parts which are to be enameled are first put through a process known as bonderizing, which prepares and rustproofs the steel.

Bonderizing consists of putting the steel parts through a solution of manganese phosphate and iron phosphate in water, at a temperature of 210 degrees Fahr. A manganese iron phosphate coating is deposited on the steel. Parts enter the bonderizing tank and make three passes through it. Time in solution is 10 minutes, after which parts go through a rinse tank of hot water and then through a drying oven.

—STEEL, 5-9-32

Induction Furnaces

Some features of the coreless induction furnace, by A. D. Meyer, in Heat Treating and Forging, April 1932, p. 257, 3½ pp., 3 illusts.

The coreless induction furnace permits control equaled heretofore only by laboratory apparatus. Temperature of the charge being heated may be controlled to within a few degrees. All heat energy is generated directly in the charge itself, and no part of the furnace is hotter than the charge. Temperature of the charge responds instantly to changes in the power input. Contamination of the metal is reduced to a minimum. The absence of furnace gases or electrodes is a factor in making clean metal. Chemical composition of materials melted in this furnace may be controlled closely. One user of this type of equipment has made 1700 consecutive heats of alloy steel with carbon ranging from 0.04 to 2.35 per cent and other elements ranging from 3 to 24 per cent, all within specifications.

—STEEL, 5-9-32

High-Speed Steel

Modern high-speed steels and their characteristics, by J. P. Gill, in Machinery, May 1932, p. 662, 3 pp., 1 table.

Three general types of high-speed steel of proved merit are in common use in this country today. They may be designated as (1) the 18 per cent tungsten, 4 per cent chromium, 1 per cent vanadium type; (2) the 14 per cent tungsten, 4 per cent chromium, 2 per cent vanadium type; and (3) the 18-4-1 type plus a variable percentage of cobalt. The first of these three is by far the most generally used.

Carbon content in high-speed steel is of great importance, since with tungsten and chromium content remaining constant, hardness and toughness vary in direct proportion to carbon content. In most high-speed steels the carbon range is from 0.67 to 0.72 per cent. Effect of other elements upon physical characteristics is discussed.

—STEEL, 5-9-32

New Equipment

PRODUCTION FABRICATION TREATMENT FINISHING

Lifting Magnet Has Variety Of Applications

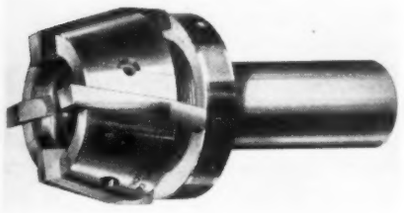
Electric Controller & Mfg. Co., 2696 East Seventy-ninth street, Cleveland, recently announced a new size heavy-duty lifting magnet designated No. 3½ type SA. The unit, shown at the right, is 39 inches in diameter, and is an intermediate size for overhead, crawler, gasoline or locomotive type cranes in foundries, scrapyards, railway stores and maintenance-of-way departments and in warehouses. It is intended for use where crane capacity permits employment of a magnet of greater lifting capacity than present magnets in the 30 to 39-inch range but does not permit handling a magnet of the next larger size.

The new magnet weighs approximately 20 per cent more than corresponding sizes and requires a 5 kilowatt direct-current generator, which is standard size. The new magnet takes advantage of all power generated, thereby producing maximum lifting capacity from power available and increasing the tonnage handled by the crane.

Electric Controller & Mfg. Co. develops new size lifting magnet

Design of this new unit is essentially the same as the other sizes of type SA lifting magnets. The case is made of high permeability steel with radial ribs on the top and extending down the sides, providing a large radiating surface to insure cool operation. Renewable pole shoes and the heavily ribbed manganese steel outer bottom plate are held in position against the machined surfaces on the magnet housing by self-locking through bolts. The magnet coil is strap wound and is treated by a special vacuum impregnation process, making it a moisture-proof unit. After the coil is placed in the magnet case all intervening spaces in the interior are filled with plastic compound to insure a permanent and water-tight seal.

Each magnet is furnished complete with two heavy, protected connecting cables and two of the new style cable connectors to facilitate easy installation. For operating the magnet the new automatic discharge magnet controller consisting of a small two-position master switch and a steel safety cabinet containing the contactors and resistors, is provided.



General purpose type J hollow mill designed by Gairing Tool Co.

◆

Unit Is Adapted to Grind Steckel Mill Rolls

Landis Tool Co., Waynesboro, Pa., has adapted its 10 x 72-inch type B plain hydraulic unit to grinding the small diameter working rolls employed in the Steckel mill process for cold rolling thin wide strip steel. As the accompanying illustration indicates, the machine is almost entirely standard. Special roll carrying heads are used as work rests, however, and special means for driving the roll have been provided.

Although the standard range of 10-inch hydraulic work speeds is adequate for ordinary grinding, it was not satisfactory for this particular operation; consequently the headstock drive has been altered to lower considerably the work speed range. The usual field rheostat controlled, adjustable speed motor gives a wide selection of speeds within the two limits.

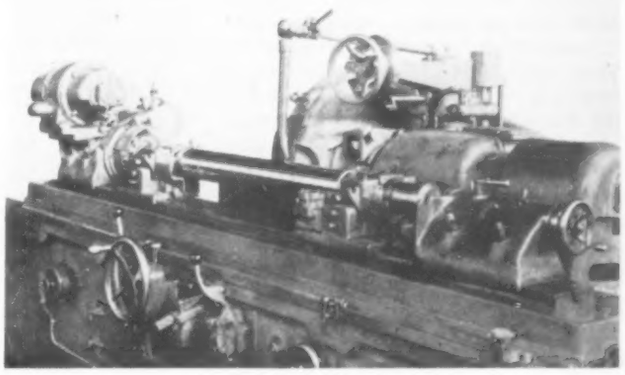
Roll heads are of the three-bearing type. All bearings are adjustable. the lower and front bearings at the front of the head and the rear bearings at the top of the head. It is essential that the bearings be adjusted carefully before grinding proceeds. Experience also has shown that it is important that the roll necks be lubricated thoroughly during the grinding operation. To accomplish this a heavy felt-lined block is placed on top of the neck with provision for saturating felt with oil.

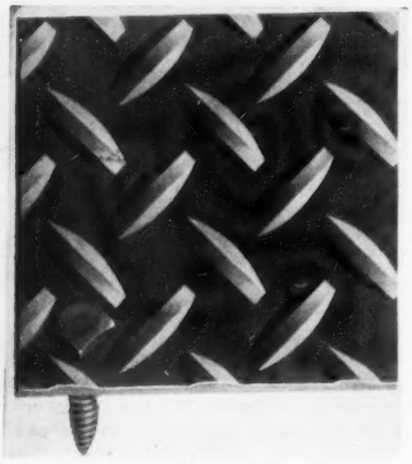
◆

Designs New Serrated Blade Hollow Mill

Gairing Tool Co., Detroit, has announced that the latest addition to its line of end cutting tools is a new serrated blade hollow mill designed to promote economy in hollow mill operations on light roughing and finishing cuts or for turning operations not requiring a heavy duty mill. Made with replaceable blades, easily and quickly adjustable, the tool body can be fitted with drills, reamers or form blades. The blades are set radially for machining bronze, brass, cast iron,

LANDIS TOOL CO. has adapted its 10 x 72-inch plain hydraulic grinder to the operation of grinding small diameter working rolls used in the Steckel mill process. Special roll carrying heads are used instead of work rests





Inland four-way bridge tread showing how lag screws seat

etc., and at an angle for the cutting of steel.

The serrated blade is anchored securely in position by engaging a corresponding serration in the body. A hardened and ground steel wedge supporting the blade the entire length of the body, holds the cutting blade rigid. This blade design is capable of quick adjustment for release or replacement of blades by releasing the lock screw holding the wedge. Adjustment is both radial and lateral. The locking or thrust collar on the threaded portion of the body urges the cutting blades forward in their respective slots.

The hollow mill, shown in the illustration on page 45, is supplied with a complete set of high-speed steel blades ground to size, with the blades contacting the bottom of the blade slots. Adjustment of ⅛ inch can be obtained by the adjusting nut, but the blades may be positioned for larger diameters on the serration.

◆

Manufactures Four-Way Bridge Treads

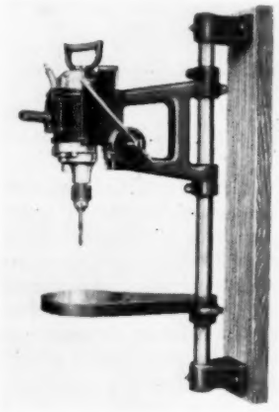
Inland Steel Co., First National Bank building, Chicago, recently placed in production four-way bridge treads. This new product is manufactured from four-way floor plate described in the Oct. 19, 1931, issue of STEEL, page 44. The name "four-way" is taken from the arrangement of projections, each one of which centers the next at right angles so that the resistance to slippage is equal in all four directions —forward, backward, to the right or to the left.

Projections are higher in the center and thus present friction edges to the tire or foot. The design provides that projections overlap lengthwise as well as crosswise, as shown in the accompanying illustration. Treads are supplied in thicknesses ranging from 3/16 to 1 inch and in widths from 20 to 42 inches. Standard length is 15 feet but odd lengths are supplied as required. Galvanized lag screws are supplied for fastening—6 inches apart across ends and 15 inches apart along the sides.

◆

Tiering Truck Possesses Unique Features

Automatic Transportation Co. Inc., 101 West Eighty-seventh street, Chicago, has developed a new tilting, tiering fork truck possessing features which make it particularly adaptable and desirable for handling materials in factories, shops, terminals and warehouses.



Hisey-Wolf post-type radial drill stand

The unit, shown in the accompanying illustration, is available in capacities from 1000 to 6000 pounds. It has telescopic upright members, and a double roller chain lifting mechanism to give high elevating speed as well as safety regardless of the position of the load. Tilting is accomplished by two heavy-duty links connected to the tilting mechanism, this design feature insuring stability to the upright members regardless of the angle of tilt.

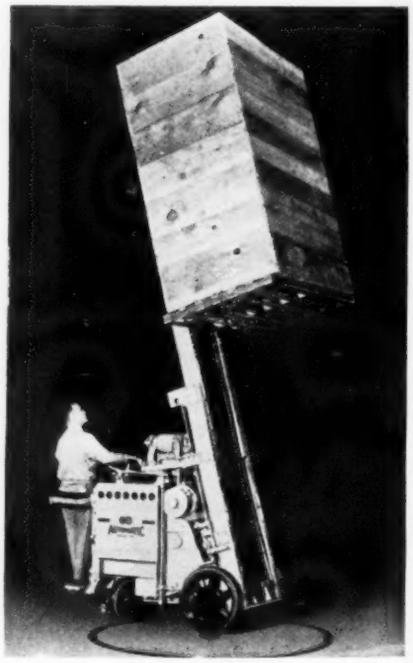
An improved controller is used on this model, which eliminates arcing. It is a combination of foot and hand operation with interlocks on the traction brakes and an automatic return to neutral. Because of the location of the driving axle, this truck can be turned in its own length. The axle is located at the base of the upright, universal joints on the driving units being eliminated. Steering is accomplished through a wheel connected to the two trailing axle wheels located under the battery compartment which may be equipped with any standard type of storage battery, or with a self-contained gas-electric power unit.

◆

Develops Post-Type Radial Drill Stand

Hisey-Wolf Machine Co., Cincinnati, has introduced a post-type radial drill stand with a positive rack and pinion feed adjustment which can be furnished for all Hisey portable electric drills up to and including ⅞-inch capacity. The feed operated through the rack and pinion is the same as the ordinary drill press, thereby permitting a positive and sensitive control without fatigue to the operator. Motor holding brackets are designed so that the portable drill can be attached without removing a single part of the machine.

General specifications of the unit, shown in the accompanying illustration, include a vertical adjustment of 7½ inches by means of a lever through rack and pinion; vertical adjustment of 19 inches up and down on the main column; total vertical adjustment of 26½ inches; diameter of main column 2 inches; maximum arm reach from column to drill spindle 13 inches; net weight 140 pounds. The full arm length will swing is a circle of 240 degrees.



New model Automatic tilting, tiering fork truck is versatile

Auto Needs Maintaining Steel Rate

Detroit Mills Lead Country—Active Structural Inquiry 275,000 Tons —Lower Wages May Threaten Prices—Great Northern Buys Rails

AUTOMOTIVE requirements being rolled in the Detroit district are a sustaining force for steelmaking operations and enabled the industry in the week ended May 7 to hold the 24 per cent rate attained the week preceding.

Tentative schedules for this week indicate little change. For the first time in weeks eastern Pennsylvania mills are expanding, and more capacity is being put on at Chicago and Youngstown, promising an offset for reductions at Birmingham and Buffalo and a stationary position at Cleveland.

With Ford and Chevrolet each scheduling about 60,000 units this month—40,000 of the Fords being the new eight—and Plymouth about 20,000, motor car production in May will be the highest in at least eight months. Especially for Detroit district mills is this providing tonnage, and operations there are in excess of 60 per cent.

To a somewhat lesser degree northern Ohio mills expect to benefit from this automotive activity. Chicago mills have been accumulating orders, for economical rolling, and last week's sales were the third best this year. Pittsburgh, however, appears resigned to a dull situation.

Great Northern railroad has placed 10,000 tons of rails and 2000 tons of track fastenings with the Illinois, Inland and Bethlehem companies. Postponement of the 7000 tons for the Chicago & Alton is probable. Freight car builders in the Chicago district expect noteworthy repair business this fall. In April not one standard freight car was ordered, the first blank month in history.

A preliminary estimate of structural steel requirements of the San Francisco-Oakland bridge is 150,000 tons; this is exclusive of cable. Bids are being taken on 3500 tons of plates and structurals for bulkhead gates for the Hoover dam. Active structural inquiry this week totals 275,000 tons; awards aggregated 11,551 net tons.

Barge work, totaling 20,000 tons, is nearer the award stage at Pittsburgh. Missouri Power & Light Co., Kansas City, Mo., is projecting a 15-mile 18-inch steel gas line. Tin plate specifications at Pittsburgh have eased, dropping production to 45 per cent, but in the valley the 50 per cent gait still is maintained.

Semifinished and raw materials continue inactive, save for pig iron moving to automotive foundries. Foreign iron is a depressing factor on prices in the East, resulting in the filing of a dumping complaint at Washington. Dumping of steel hoops also has been complained of.

Despite some concessions at Detroit, finished steel prices are regarded as firmly held. Producers will resist strongly any effort to exact lower prices as the result of further wage and salary reductions. State and municipal economy is retarding some business, and in the Pacific Northwest successful bidders must take bonds in payments.

In both pig iron and steel ingots, April set a new low for this depression with a daily rate not plumbed since July, 1921. The ingot rate of 47,685 gross tons compares with 52,253 tons in March and 50,092 tons in December, 1931, the previous low-mark of the depression. Capacity was engaged 22.5 per cent in April. The 4-month total output of ingots is 5,571,478 tons; a year ago 10,677,124 tons. April's daily pig iron rate of 28,524 gross tons contrasts with 31,194 tons in March. A net loss of one brought active blast furnace stacks as of April 30 to 59.

An adjustment in the valley quotation on malleable iron lowers STEEL's composite of iron and steel 2 cents to $29.68. Weakness in the Pittsburgh and eastern Pennsylvania districts takes 33 cents off the scrap composite, which now is $7.21. The finished steel composite is unchanged at $47.62.

Composite Market Averages

	May 7	April 30	One Month Ago April, 1932	Three Month Ago Feb., 1932	One Year Ago May, 1931	Ten Years Ago May, 1922
Iron and Steel Composite	$29.68	$29.70	$29.75	$29.56	$31.37	$36.49
Finished Steel Composite	47.62	47.62	47.62	46.72	49.02	52.39
Steelworks Scrap Composite	7.21	7.54	7.76	7.89	10.12	14.67

Iron and Steel Composite:—Pig iron billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	May 7, 1932	April, 1932	Feb., 1932	May, 1931
PIG IRON				
Bessemer, del., Pittsburgh	$16.26	16.76	16.96	18.26
Basic, valley	15.00	15.00	15.00	17.00
Basic, eastern del., eastern Pa.	15.00	15.00	15.75	17.00
No. 2 foundry, del. Pittsburgh	16.26	16.26	16.76	18.26
No. 2 foundry, Chicago	16.00	16.00	16.50	17.50
*Southern No. 2, Birmingham	11.00	11.00	11.20	12.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.26	15.66	15.76	17.76
Malleable, valley	15.50	15.50	15.50	17.00
Malleable, Chicago	16.00	16.00	16.50	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	23.04	27.04
Gray forge, del. Pittsburgh	15.63	16.13	16.33	17.63
Ferromanganese, del. Pittsburgh	80.24	80.24	80.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville, furnace, ovens	2.25	2.25	2.25	2.45
Connellsville foundry, ovens	3.25	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	25.80	29.75
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.75
Billets, open-hearth, Pittsburgh	27.00	27.00	27.00	30.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	May 7, 1932	April, 1932	Feb., 1932	May, 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.50	1.65
Steel bars, Chicago	1.65	1.70	1.60	1.75
Steel bars, Philadelphia	1.91	1.91	1.81	1.94
Iron bars, Chicago	1.70	1.70	1.70	1.80
Shapes, Pittsburgh	1.60	1.60	1.50	1.65
Shapes, Philadelphia	1.75	1.75	1.62	1.76
Shapes, Chicago	1.70	1.70	1.60	1.75
Tank plates, Pittsburgh	1.60	1.60	1.50	1.65
Tank plates, Philadelphia	1.79½	1.79½	1.69½	1.85½
Tank plates, Chicago	1.70	1.70	1.60	1.75
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.20	2.15	2.25
Sheets, No. 24, galvan., Pitts.	2.85	2.85	2.75	2.80
Sheets, No. 10 blue aneal., Chi.	1.85	1.85	1.90	2.00
†Sheets, No. 24, hot, ann., Chi.	2.35	2.35	2.35	2.40
Sheets, No. 24 galvan., Chi.	3.00	3.00	2.95	2.95
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.00	10.20	10.25	11.25
Heavy melting steel, eastern Pa.	6.50	7.20	7.35	9.50
Heavy melting steel, Chicago	6.50	6.55	6.80	8.65
No. 1 wrought, eastern Pa.	7.75	7.95	9.00	11.00
No. 1 wrought, Chicago	5.25	5.85	6.85	8.40
Rails for rolling, Chicago	8.50	8.90	9.85	11.15

Sheets

Automotive Orders Still Small —Refrigerator Requirements Lighter—Chicago Output Down

SHEET PRICES, PAGE 49

Pittsburgh—Sheet demand is fairly steady at a continued low rate, with operations also generally unchanged at 25 per cent. Automotive orders are confined to small lots; they have shown only a slight improvement since a month ago. Specifications from some other consumers are tending downward. Operations of electrical refrigerator manufacturers are less active. Prices are fairly steady at recent levels of 2.20c, Pittsburgh, for hot-rolled annealed sheets, 2.85c for galvanized; and 1.55c for heavy hot-rolled.

Philadelphia—April 30 was the closing date on shipments placed at the close of the first quarter at former prices, and consumers' stocks of galvanized as a consequence are fairly large. New demand for sheets is quiet.

District of Columbia commissioners, Washington, close May 20 on approximately 100 tons of sheet steel for 250,000 automobile tags. The quartermaster, marine corps, Washington, closes May 11 on 122 tons of sheet steel.

Buffalo—Sheet mills have speeded up to 30 per cent to get out some rush automotive orders. The average output of the current quarter to date, however, is not more than 25 per cent.

New York—Demand for sheets is sluggish. Prices are holding on the small volume of business.

Youngstown, O.—A few additional sheet mills have resumed, bringing the valley finishing mill rates a trifle higher than expected at the beginning of last week. The steady inflow of specifications for common black, galvanized and autobody sheets is enabling mill managers to maintain fairly consistent operations. Usually there is a tapering off in sheet mill activity by the end of June, but this year it promises to carry well into July.

Cleveland—A more cheerful sentiment prevails in the sheet market here, as a consequence of the three leading automotive producers increasing operations, but this activity has not been reflected as yet in more than slight improvement in demand for sheets. Chevrolet's stepping up production schedules for this month to 60,000 units, compared with 40,000 in April, and expansion in Ford working forces here and in several other cities are considered hopeful signs. Refrigerator manufacturers have caught up well with orders and new demand from this source is quieter. Barrel, culvert and furniture requirements are slow. Prices on most grades are firm; little deviation is noted from the 2.80c to 2.90c, Pittsburgh, quotations on autobody.

Cincinnati — Demand for sheets for electrical refrigerators is being maintained, but a tapering is noted in specifications for roofing. Seasonal buying in the South is light. Automotive releases are unimproved. Prices remain steady.

Chicago—Sheet orders are tapering, and operations are at about 20 per cent, as against 30 to 35 per cent for a part of April and March. A slight gain again is expected later this week. Refrigerator demand has been tapering, and seasonal operations in a number of miscellaneous lines have been completed. Prices are steady.

Birmingham, Ala.—Sheet mills are operating on slow schedule. Gulf States Steel Co. plans to resume at Gadsden this week to roll a small tonnage. The market is slow.

Toronto, Ont.—Producers and distributors of sheets report business in the last half of April was smaller than in the first half, and no improvement has developed since May 1. The most hopeful factor is the steadiness of prices.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.30c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.80c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f.	3.45c

AUTOMOBILE NO. 20

Pittsburgh, base	2.80c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
Gary, Ind. Harbor, base	2.35c
Chicago, del.	2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
Gary, Ind. Harbor, base	2.85c
Chicago, del.	2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE
Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Long ternes, 24, unassort.	3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)
F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95
(Per pound)	
Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00
(To Manufacturing Trade)	
Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.80c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.75c
New York, del.	1.87c
Boston, del.	2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.00c
Do., wide flange	2.10c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.90c
Boston, del.	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c to 1.35c

IRON

*Chicago, base	1.65c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chi., billet	1.65c to 1.75c
Chi., rail steel	1.55c to 1.60c
Chi., rail steel, road, bridge and culvert	1.55c
Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	1.90c to 2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bars, 2.65c, mill
(Differentials to various classes of consumers)

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10 Cr.	0.45
2100	0.55	51.00 Cr. spring	0.20
2300	1.50	6100 bars	1.20
2500	2.25	6100 Spring	0.95
3100	0.55	Cr., Ni., Van.	1.50
3200	1.35	Carbon Van.	0.95
3300	3.80	9250 (flats)	0.25
3400	3.20	9250 (rds.,sq.)	0.50
4100 .15 to .25 Mo.	0.50		

Strip, Hoops, Bands

Hot strip, to 6 in., Pitts.	1.60c
Do, 6 1/16 to 24-in., Pitts.	1.50c
*Hot strip to 6 in. Chi.	1.60c
*Do, 6 1/16 to 24-in.	1.50c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset, 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do. less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleve.	70, 10 and 5 off

Bars

Steady Buying in Small Lots Fails to Keep Mills Busy—Prices Hold at Steady Level

BAR PRICES, PAGE 49

Chicago—Bar production, including alloy mills, is scheduled at 25 to 30 per cent this week, a shade higher. Automotive orders and miscellaneous buying have brought an accumulation of smaller lots, which may develop heavier operations for several weeks. Finishing mills are allowing mixed orders to accumulate as much as possible under delivery specifications. Most road machinery builders are reducing specifications, as state and county highway commissions are deferring purchases of road equipment, but one road machinery builder in this territory has just booked the largest order in over a year. Soft steel bars are quoted 1.70c, Chicago, and rail steel bars are 1.50c to 1.60c, Chicago Heights. Rail steel bar mills are at 30 per cent.

Boston—Union Drawn Steel Co. and Bethlehem Steel Co. have been awarded about 50 tons of bars for the Newport torpedo station on which bids were taken some weeks ago. The former booked 83,400 pounds cold-rolled rounds, 1 13/32-inch diameter, at 3.03c delivered while Bethlehem Steel Co. took 15,150 pounds heat treated alloy, 0.930-inch round, about 6475 feet at 6.995c.

New York—Demand for soft steel bars is quiet and prices are unchanged. Most buying is in small lots for immediate delivery.

Philadelphia—Steel bars are steady at 1.60c, Pittsburgh, and iron bars are 1.60c to 1.65c, Pittsburgh. Trading is slow and orders are for small lots.

Bids close May 17 with the navy on 45 tons of round medium bar rivet steel, one-half diameter, quotations to be taken for delivery to the navy yard at Mare Island, Calif., and f.o.b. works. For Puget Sound bids close May 17 on 3860 pounds of corrosion-resisting steel and May 24 on 19,080 pounds of steel forgings for Mare Island.

Pittsburgh — Improvement noted recently in steel bar specifications from the automotive industry has been slight and demands of other users are unchanged. Small orders predominate and although the market lacks a test of heavy buying 1.60c, Pittsburgh, is well maintained.

Youngstown, O.—Widely scattered demand for common steel bars has resulted in maintaining fair rate of operations in some local mills. A slightly improved demand for alloy steel bars also is coming from auto partsmakers, although not in the volume hoped for. This is expected to show gains by the middle or latter part of this month.

Cleveland—Most orders for soft steel bars are from automotive manufacturers, the number being fairly numerous, but the volume discouragingly small. Building and road work are taking small lots; no orders of consequence have been received from railroads in several weeks. Soft steel bars are firm at 1.65c, Cleveland.

Tin Plate Production Slower at Pittsburgh

Tin Plate Prices, Page 49

Pittsburgh—Tin plate operations have moderated slightly from the peak rate attained recently, now averaging 45 to 50 per cent. Hope still is held for better activity later. Some production still represents stock material. The market continues $4.75, Pittsburgh, per base box.

Youngstown, O.—Carefully calculated specifying of tin plate by the canning interests, indicating they are planning not to overbuy for next season's crops, still is sufficient to keep mills operating around 50 per cent. Prospects now are that current operating rates will be maintained throughout May.

Cold-Finished Buying Is All for Current Needs

Cold Finished Prices, Page 49

Pittsburgh — Specifications for cold-finished steel bars were slightly more active during the past week, although activity still is depressed and demand is spotty. Improvement in releases is coming principally from automotive interests. The market generally continues 2.00c, Pittsburgh, with a higher price in prospect for third quarter.

Cleveland—Volume in cold-finished material is slightly better, but individual orders still are small and for immediate shipment. The price holds at 2.00c, Cleveland.

Plates

Small Orders Increase Volume—Oil Work Tapers — Barge Prospects Appear Better

PLATE PRICES, PAGE 49

Chicago—Oil tank fabricators see no immediate prospects for revival of refinery work in the oil fields. Occasional orders are placed with small tankmakers. A tank fabricator in this district has taken 300 tons in Pennsylvania and New York. Plate quotation is nominal at 1.70c, Chicago. Plate mill operations are variable.

Philadelphia—Platemakers lost to cast iron producers on a 2000-ton pipe line for the Panther Valley Water Co., Tamaqua, Pa. General trading is light. Prices are unchanged at 1.70c, Coatesville, Pa. New less-carload rates to Philadelphia are 18.7 cents from Coatesville; 20.9 from Bethlehem, Pa., and 40 cents, from Pittsburgh.

Pittsburgh — Prospects in the barge market are rather favorable and some orders are expected to be placed shortly. Plate demand generally is unchanged, however, with specifications from leading consumers only for small lots. The market generally is 1.60c, Pittsburgh.

Cleveland—Many small orders for plates are being booked, improving volume, but large demands still are lacking. Specialties appear slightly more active. McClintic-Marshall Corp., Bethlehem, Pa., has been awarded a tank in Cleveland, taking 210 tons, Industrial Construction Co., Cleveland, has taken a 637-foot plate girder bridge near Spring Creek, Pa., requiring a small lot of plates. Plates are steady at 1.60c, Pittsburgh.

Contracts Placed

210 tons, tank, Cleveland, to McClintic-Marshall Corp., Bethlehem, Pa.

225 tons, 1,000,000-gallon tank and 100,000-gallon tank, federal penitentiary, Lewisburg, Pa., to Chicago Bridge & Iron Works, Chicago.

100 tons, two 250,000-gallon and one 80,000-gallon tank for East Bay municipal utility district, Oakland, Calif., to Berkeley Steel Construction Co., Berkeley, Calif.

100 tons, tanks for Los Angeles, specification 2782, to Lacey Mfg. Co., Los Angeles.

Unstated tonnage, tank, Vermillion, S. Dak., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

Contracts Pending

3500 tons, bulkhead gates and frames for Hoover dam project, Boulder City, Nev., bids opened.

350 tons, plates and shapes, two tow boats for Inland Waterways Corp.; Midland Barge Co., Midland, Pa., low bidder.

288 tons, plates and shapes, two whirler derrick boats for United States engineers, Memphis, Tenn., district; bids close June 1.

Unstated tonnage, rolled nickel steel bearing plates, overhaul Pacific Locks, Panama Canal.

Forging Billet Demand Is Improved Slightly

Semifinished Prices, Page 56

Pittsburgh—Sales of rerolling material are quiet in the semifinished market, although forging billets are slightly more active. Shipments recently show practically no change from the rate of the past several weeks. Producers' billet stocks are large but few inquiries are appearing. The market is nominally unchanged at $26 to $27 for billets, slabs and sheet bars, with forging billets relatively firmer at $33.

Youngstown, O.—The recent slight bulge in strip and sheets did not stimulate demand for billets and sheet bars. Billets and slabs are $27, Youngstown, Pittsburgh and Cleveland; and sheet bars are $26, Youngstown and Cleveland, and $26 to $27, Pittsburgh.

Reading Orders Rail-Car

Philadelphia — Reading railroad has ordered the first stainless steel pneumatic rail-car of the Budd-Micheline type being made by the Edward G. Budd Mfg. Co.

This type of rail vehicle, originated in France, is made entirely of stainless steel and fabricated by the Budd method of shot welding, making for extremely lightweight and permanency of construction.

Allis-Chalmers Mfg. Co., Milwaukee, reports net loss of $936,395, after depreciation and interest, for the first quarter, 1932. This compares with a net profit of $492,807, equal to 38 cents a share, in first quarter, 1931.

Railroads

Great Northern Places 10,000 Tons Rails—No Car Buying in April Sets Negative Record

TRACK MATERIAL PRICES, PAGE 49

New York—No freight cars were placed in April, for the first month on record. The only activity was placing of 100 mine cars and a few scattered orders for underframes and repairs. The May outlook is for little improvement. Following is a comparative statement:

	1932	1931	1930	1929
Jan.	159	100	5,072	13,196
Feb.	35	50	17,027	15,944
March	105	2,166	6,118	12,023
April	0	2,798	1,997	8,205
4 mo.	299	4,114	30,214	49,368
May		20	1,392	7,562
June		1,910	998	5,886
July		617	1,389	341
Aug.		1,304	1,111	2,854
Sept.		703	576	4,517
Oct.		980	4,116	19,506
Nov.		35	2,621	6,361
Dec.		11	2,729	9,710
Total		10,694	45,146	106,105

Locomotive buying is negligible. New York Central is releasing its requirements of spikes, track bolts and tie plates for spring maintenance work.

Philadelphia — Railroad supply trade in the East pins hope for early improvement in demand on possible approval of the Pennsylvania's application for a $55,000,000 loan from the Reconstruction Finance Corp. Buying by railroads in general is practically absent in cars, rails, locomotives and general steel supplies.

Buffalo—Buffalo district rail mills operated at a better rate during April than for a long time. May specifications are slow and no tonnage was produced here during the first week.

Pittsburgh—In the absence of new inquiry and lack of improvment in specifications against old orders activity in the railroad market is extremely dull. The recent inquiry of the New York Central railroad still is pending.

Chicago—Track fastenings orders are holding up to the recent pace. About 2000 tons of track bolts, spikes, angle bars and tie plates have been placed in the last few days. Great Northern has awarded 10,000 tons of rails and 2000 tons of track fastenings to Illinois Steel Co., Inland Steel Co. and Bethlehem Steel Co. Delivery is to begin immediately. Chicago & Alton's purchase of 7000 tons is not likely for the immediate future. Freight car builders are expecting more active car repair orders in the late summer and autumn, Chicago & North Western railroad has added 1000 men for track maintenance work.

Car Orders Placed

Cudahy Packing Co., 25 sets underframe parts, to Pullman Car & Mfg. Corp.

Hill & Seunder, nine air dump cars to Koppel Industrial Car & Equipment Co.

Rail Orders Placed

Great Northern, 10,000 tons rails, to Bethlehem, Illinois and Inland Steel Cos.

Wire Buying Steady but Below Seasonal Quantity

Wire Prices, Page 49

Chicago—Wire producers are able to reduce mill stocks slightly because of moderately improved buying of merchant wire goods this month. Manufacturers' wire continues slow. Prices are untested at $2, Chicago or western mills, for nails, and 2.25c for plain wire. Buying in the Northwest is improved as a result of open weather.

Worcester, Mass.—The wire market shows little change and no trends. Some acceleration is expected from building trades. Demand remains stationary.

Philadelphia—Wire products are quiet, with moderate demand and prices are firm, with little test.

Pittsburgh — Demand for wire products has failed to improve materially over the low rate of the past 30 days. Activity in manufacturers' wire has been fairly well maintained, but jobbers' products are moving slowly in agricultural districts. Prices generally are steady with wire nails continuing $1.95 in carloads, plain wire 2.20c and wire rods $37.

Cleveland—Manufacturers of wire goods have fairly good orders, but releases are slow in developing. Plain wire is steady at 2.20c. Nails are 1.95c, in carloads, and 2.35c, in less than carloads, for direct shipment. Some jobbers in this district are offering nails at 2.20c, delivered.

Mount Hope suspension bridge, between Bristol and Portsmouth, N. H., and recalled for the failure of the first cables, now in receivership, will be auctioned in May.

Structural Shapes

Awards Remain Light, but Pending Work Mounts to 275,000 Tons, Including 150,000 for San Francisco Bridge—Bids in on 40,000 Tons in New York Area

STRUCTURAL SHAPE PRICES, PAGE 49

New York—General contract bids are in on construction in this territory taking close to 40,000 tons, early action being expected on most of this tonnage.

The structural outlook is further brightened by state bridge work in New Jersey. Close to 55,000 tons more structurals will be required for federal work in the East, to come up for general contract bids this month.

Boston—Several small bridges in Maine have been placed. Awards generally are confined to moderate tonnages. Plain material prices are untested on substantial business.

Philadelphia—Hope of a possible early approval of the Pennsylvania railroad's application to the Reconstruction Finance Corp. for a $50,000,000 loan continues to buoy sentiment in a sluggish structural market. That so much time has elapsed without a refusal of the loan is considered an encouraging sign. While plain shapes are 1.70c, nearest mill, fabricated prices still are unsettled.

Pittsburgh—Public work still looms large, private projects usually requiring only small lots. Inquiry is fairly steady and little change is noted in operations of fabricators. Specifications for plain material continue light with the market 1.60c, Pittsburgh.

Cleveland—Extremely low prices on fabricated material current several weeks ago are disappearing. Plain shapes are firm at 1.60c, Pittsburgh. Manistee, Mich., is taking bids on 450 tons of piling. A number of fair size jobs are being figured in the Detroit and Toledo districts. The Main street bridge, Cleveland, that was to take more than 5000 tons of shapes, now is scheduled to be built of concrete. Five hundred tons of shapes, however, will be required for the center span.

Chicago—A number of price protections under former contracts have not expired, and plain structural material shipments still are going forward for specific projects at below 1.70c, Chicago, though this figure is named for all new business. Structural inquiries total 6000 tons and awards, including western bridge work, amount to 4500 tons. Efforts to curtail postoffice and federal building construction will have no appreciable effect for the present.

Contracts Placed

2600 tons, bridges, Union Pacific Co., Long Beach, Calif.; to Consolidated Steel Corp., Los Angeles, 1400 tons; and to Columbia Steel Co., San Francisco, 1200 tons.

1000 tons, overhead bridge, Chippewa Falls, Wis., to Worden-Allen Co., Milwaukee.

800 tons, general exhibits group, Chicago Century of Progress exposition, awarded by B-W Construction Co., Chicago, to unstated fabricator.

690 tons, postoffice, Rockford, Ill., to American Bridge Co., New York.

544 tons, public Latin school, Boston, to Boston Structural Steel Co., Boston.

500 tons, state ward building, Pennhurst, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

500 tons, shapes, bars and miscellaneous, Shushan airport, New Orleans, to Jones & Laughlin Steel Co., Pittsburgh.

450 tons, state bridge, Preston county, West Virginia, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

432 tons, bridge, Creston, W. Va., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

400 tons, bridge at Pawnee, Okla., to J. B. Klein Iron Foundry Co., Oklahoma City, Okla.

400 tons, 10,000 steel forms, flood control mattresses, United States engineer, Memphis, Tenn., to Mesker Bros. Iron Co., St. Louis, and 5000 end forms to Crosby Co., Buffalo.

350 tons, bridges, West Virginia, Roanoke Iron & Bridge Works Inc., Roanoke, Va.

300 tons, addition to Kansas City electric railway terminal, Kansas City, Mo., to Kansas City Structural Steel Co., Kansas City.

250 tons, grandstand for Los Angeles county fair grounds, Pomona, Calif.; to McClintic-Marshall Corp., Bethlehem, Pa.

240 tons, state bridge superstructure, Presque Isle, Me., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

216 tons, convent, Scranton, Pa., to Lehigh Structural Steel Co., Allentown, Pa.

210 tons, bridge, Albany, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

200 tons, powerhouse, Quakertown, Pa., to Lehigh Structural Steel Co., Allentown, Pa.

155 tons, highway bridges in Minnesota, to Minneapolis Moline Power Implement Co., Minneapolis.

150 tons, grain elevator, Kansas City, Mo., to Mississippi Valley Structural Steel Co., Decatur, Ill.

125 tons, state bridge, Little Elk Creek, Elkton-Childs road, Maryland, to Roanoke Iron & Bridge Works Inc., Roanoke, Va.

120 tons, crane runway, navy yard, Brooklyn, N. Y., National Bridge Works, Long Island City, N. Y.

105 tons, roof, Lakeside, O., auditorium, to Fort Pitt Bridge Works Co., Pittsburgh.

100 tons, shapes and bars, Joline Hall dormitory, Princeton, N. J., to Belmont Iron Works and Taylor-Davis Co., Philadelphia.

100 tons, postoffice New Kensington, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, bridge, Wayne county, Mich., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, Illinois bridge work, to Wisconsin Bridge & Iron Co., Milwaukee.

100 tons, sluice gates and structural steel for United States engineer at Kaukauna, Wis., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

100 tons, state bridge, Kentucky, International Steel & Iron Co., Evansville, Ind.

100 tons, school addition, Teaneck, N. J., to Selbach-Meyer Co., West New York, N. J.

Awards Compared

	Tons
Awards, week ended May 7	**11,551**
Awards, week ended Apr. 30	**15,335**
Awards, week ended Apr. 23	**11,500**
Awards, this week in 1931	**22,690**
Av. weekly awards, 1931....	**34,236**
Av. weekly awards, 1932..	**13,904**
Av. weekly awards, April..	**11,527**
Awards to date, 1931	**780,489**
Awards to date, 1932.....	**264,176**

Contracts Pending

150,000 tons, preliminary estimate, San Francisco-Oakland bridge, not including cables for suspension portion.

13,500 tons, postoffice annex and foundation, New York, James Stewart & Co., New York, low on combination lump sum and addition fee, total $975,000. Starrett Bros. & Eken, New York, low on lump sum only, $839,000, latter's addition fee being $176,000, total $1,015,000.

5500 tons, postoffice, court house, Newark, N. J.; supplementary bids May 4. N. P. Severin Co., Chicago, low.

2485 tons, bridge, Shrewesbury river, between Highlands and Seabright, Monmouth county, N. J., New Jersey state highway commission, bids May 25.

1200 tons, bridge work for West Virginia highway commission.

700 tons, H street bridge over American river, Sacramento, Calif., bids May 9.

600 tons, sheet steel piling, state bridge, Ocean City, N. J., bids May 18.

600 tons, Illinois bridges, Midland Structural Steel Co., Chicago, and Vincennes Bridge Co., Vincennes, Ind., low.

587 tons, bridge, Beach Thorofare, Ninth street, Ocean City, N. J., bids May 18; State Highway commission, A. Lee Grover, chief clerk, Trenton, N. J.

450 tons, piling, Manistee, Mich., bids being taken.

400 to 600 tons, Kress store, Hollywood, Calif., bids opened.

400 tons, bridge, Richmond, R. I.

350 tons, warehouse and transit shed, Richmond, Va., steel frame and sides, bids in.

350 tons, armory, Jamestown, N. Y., bids May 6.

350 tons, shapes and bars, postoffice, Meridian, Miss.

327 tons, two bridges for Los Angeles county, Calif., over Los Angeles and Rio Hondo rivers, bids opened.

300 tons, addition to Fruehauf Trailer Co., building, Detroit, bids being taken.

285 tons, highway bridges in Latimer and Kiowa counties, Oklahoma.

250 tons, Oddfellows' home, Philadelphia, contemplated.

225 tons, postoffice, Norristown, Pa., bids May 19.

210 tons, Schrafft store, Chestnut street, Philadelphia, bids opened.

200 tons, state hospital, Allentown, Pa., bids being taken.

125 tons, barracks, Barksdale Field, Shreveport, La.; Tom Wood, Sherman, Tex., low.

125 tons, postoffice, Dover, Del., Conneen Construction Co., Philadelphia, general contractors.

115 tons, state ward buildings, Selingsgrove, Pa., Hood & Gross, Philadelphia, general contractors.

115 tons, high school, Downington, Pa., Progressive Iron Co., Reading, Pa., low.

100 tons, grade elimination, Toledo Terminal railroad, Toledo, O., A. Bentley & Sons Co., Toledo, general contractor.

100 tons, bridge, Norwich, Conn.

100 tons, postoffice, Merced, Calif., bids May 31.

100 tons, pier at Fort Mason, San Francisco, bids opened.

100 tons, telephone building, Monterey, Calif., bids opened.

Unstated tons, postoffice, Waukegan, Ill.; Paschen Bros. Inc., Chicago, low, $143,000, bids May 2.

Modern Highway Uses Much Steel in Many Forms

Contributions by steel to the development of the modern highway, in materials actually incorporated into its building and accessories to its use, as well as machinery utilized in construction, have been presented in a current report of the department of commerce by J. Joseph W. Palmer.

Steel highways are not yet an accomplished fact, he says, though experiments are under way, but steel adds largely to the value of existing forms of highway built for heavy and speedy traffic. Its uses include reinforcement, bridges, culverts, curbing guards, guard fencing and signs and route markers.

Estimate of tonnage of steel consumed for highways is difficult, but Mr. Palmer takes the estimate of STEEL for 1930, that 1.54 per cent of finished steel made in the United States that year went into highway construction, a total of 395,370 tons.

Indirect use of steel as appurtenances to the highway add largely to these figures.

Concrete Bars

Six Thousand Tons Pending For Many Small Jobs—Cleveland Bridge Will Require 2000 to 3000 Tons—Awards Hold to Recent Low Levels

REINFORCING BAR PRICES, PAGE 49

New York—Prices on billet reinforcing bars are holding, although untested at 1.60c, Pittsburgh. While lettings are light, more work is coming into the market, close to 1000 tons being up for highway and bridge work in New Jersey. Total tonnage in the market or on boards is the heaviest in several months. Less foreign reinforcing steel has been arriving recently. Maryland has barred imported steel for state work.

Boston—Reinforcing steel requirements for bridge and highway work are slightly heavier. Contracts have been placed for several small bridges and highway contracts in Maine, Massachusetts and other New England states. Private construction needs still are light. Prices on billet bars are steady with few exceptions, although rerolled material has an uneasy influence.

Philadelphia—Several fair size reinforcing bar jobs are pending, the latest requiring 750 tons for a state bridge at Ocean City, N. J., Monmouth, N. J., opens bids May 26 on 400 tons for a bridge. Prices generally are 1.75c, Pittsburgh, for cut lengths.

Pittsburgh—An accumulation of pending work gives a fairly good outlook to the reinforcing bar market despite continued quietness in orders. Shipments are slightly less active but some improvement is looked for over the next 30 days. Mill lengths of billet bars generally are 1.60c, Pittsburgh.

Buffalo—While sales of reinforcing bars have been slow this quarter the prospect for the remaining portion has improved. Several good size road projects are due for early closing.

Cleveland—Current demand is restricted to small lots. Cuyahoga county commissioners, Cleveland, indicate they will switch to concrete for the new Main street bridge, which should require 2000 to 3000 tons of bars, if plans for concrete finally are approved. A state highway bridge in Brook part Cleveland, projected, will take 1000 tons.

Chicago — Reinforcing bar inquiries are not sufficient to test the market. Prices quoted recently for billet reinforcing bars in public work were as low as 1.60c. A number of postoffice projects have been closed. The active Century of Progress exposition buildings will take little reinforcing bars, except the General Motors Corp. exhibit building, which will include 200 tons.

Awards Compared

	Tons
Awards, week ended May 7	2,454
Awards, week ended Apr. 30	2,408
Awards, week ended Apr. 23	4,767
Awards, this week, 1931	8,296
Av. weekly awards, 1931	6,808
Av. weekly awards, 1932	4,471
Av. weekly awards, April	4,661
Awards, to date, 1931	134,157
Awards to date, 1932	84,954

Contracts Placed

650 ton, veterans' home building, Roseburg, Oreg., to Pacific Coast Steel Corp., Seattle; Murch Bros. Construction Co., St. Louis, general contractors.

400 tons, Moline, Ill., waterworks, to Republic Steel Corp., Youngstown, O.

300 tons, Boys' Latin School, Boston, to Republic Fireproofing Co.; John Bowen Co., Boston, general contractor.

247 tons, highway work in Riverside county, Calif., to unnamed interest.

205 tons, highway work in Solona county, Calif., to Truscon Steel Co., San Francisco.

156 tons, sluice gates, United States engineer, Kaukauna, Wis., to C. T. DeHaas, Marquette, Mich.

145 tons, army engineer, Milwaukee, to Kalman Steel Corp., Bethlehem, Pa.

138 tons, bridge over Rocky creek, Monterey county, Calif., to Soule Steel Co., San Francisco.

113 tons, highway work in Orange county, Calif., to unnamed interest.

100 tons, postoffice, Davenport, Iowa, to Truscon Steel Co., Chicago.

Contracts Pending

750 tons, state bridge, Ocean City, N. J.; bids May 18.

600 tons, grain elevator, Albany, N. Y.

472 tons, bridge, Shrewsbury river, between Highlands and Seabright, Monmouth county, New Jersey; New Jersey State highway commission, bids May 25.

400 tons, bridge, Monmouth county, New Jersey; bids May 26.

400 tons, two bridges for Los Angeles County, Calif., over Los Angeles and

Rio Honda rivers; bids May 2.

384 tons, highway, Bronx parkway extension, Westchester county park commission, Bronxville, N. Y., bids May 23.

337 tons, bridge, Beach thorofare, Ninth street, Ocean City, N. J., bids May 18, state highway commission, Trenton, N. J.

327 tons, highway work in Orange county, Calif.; bids opened.

300 tons, foundations, courthouse, St. Louis; Samuel Kraus Co., St. Louis, low.

300 tons, veterans' hospital, Danville, Ill., H. G. Christman Co., South Bend, Ind., low.

250 tons, five industrial buildings, Sunnyvale, Calif., dirigible base, bids opened.

230 tons, building, state highway department, Austin, Tex.

190 tons, state prison, Rockville, Pa., Kalman Steel Corp., Bethlehem, Pa., low.

190 tons, substation, West Hollywood, Calif.; plans being prepared.

175 tons, foundations, courthouse, Jacksonville, Fla.; J. A. Jones Construction Co., Charlotte, N. C., low on general contract.

160 tons, Jewish center building, San Francisco, bids opened.

150 tons, high school, Plymouth, Wis.

125 tons, west side sewage disposal plant, Cleveland; bids May 13.

125 tons, postoffice, Waukegan, Ill., Paschen Bros. Inc., Chicago, low.

122 tons, H. street bridge over American river, Sacramento, Calif.; bids May 9.

100 tons, addition to county hospital, Redding, Calif., plans being prepared.

100 tons, retaining walls, Lakes-to-Gulf waterway project, Joliet, Ill.

100 tons, for road project, route 20, North Kingsville, O., bids at Columbus, O., May 20.

Financial News of Steel Industry

A. M. BYERS CO., Pittsburgh, reports for quarter ended March 31 net loss of $229,138 after deducting taxes, depreciation and patent amortization. For six months ended March 31 net loss was $360,322 after charges and taxes, comparing with net profit of $103,233, or $1.82 a share on preferred in first six months of preceding fiscal year.

□ □ □

M. A. Hanna Co., Cleveland, reports consolidated net corporate income of $132,289 in the first quarter, compared with $336,627 a year ago. Net income, except interest, depreciation and depletion charges, in the first quarter was $248,068, against $489,135 a year ago. The regular quarterly dividend of $1.75 on the preferred, payable June 20 to record of June 4, was declared.

□ □ □

American Rolling Mill Co., Middletown, O., reports net loss of $571,917, after all charges, in the first quarter, compared with a loss of $663,049 in the same quarter of 1931.

□ □ □

Ludlum Steel Co., Watervliet, N. Y., reports net loss of $50,920 after taxes and charges for the first quarter of 1932. This compares with net profit of $16,357, or 32 cents a preferred share, in the first quarter of 1931.

□ □ □

Otis Steel Co., Cleveland, reports a net loss of $701,162 in the first quarter of 1932, compared with a net income of $20,615 in the similar quarter of 1931.

□ □ □

Follansbee Bros. Co., Pittsburgh, reports net loss of $301,196 for the first quarter, against net loss of $203,956 in the first 1931 quarter.

□ □ □

Chain Belt Co., Milwaukee, has declared a quarterly dividend of 20 cents a share on common stock payable May 15 to record May 1, placing the issue on an 80-cent annual basis against $1 previously.

Pipe

Some Substantial Municipal Jobs Placed—Six Water and Sanitary Projects At Chicago

Chicago — Six sewage treatment and waterworks plants are being projected, each of which include several hundred tons of miscellaneous cast pressure pipe sizes. Financial arrangements for three of these projects already have been completed. A public utility buyer has ordered 300 tons of pressure pipe. Municipal business is chiefly in small lots placed through contractors. A franchise has been granted the Missouri Power & Light Co., Kansas City, for an 18-inch 15-mile natural gas line from Liberty, Mo., to Excelsior Springs, Mo.

Boston — Wellesley, Mass., has placed close to 500 tons of cast pipe with the local foundry, while smaller lots have been bought by several other cities. Orders are fairly numerous, but the aggregate is below normal. Prices continue easy.

New York — Approximately 3500 tons of steel pipe is affected by the postponement of the opening of bids for the new federal building here to May 17.

Pending cast pipe tonnage is confined mainly to small state projects. Larger tonnages at Brentwod, West Haverstraw and Wingdale, N. Y., taking about 1200 tons, are to be closed soon. Prices continue weak, with as low as $22 and $23, foundry, noted.

Pittsburgh—Action is deferred on pending pipe line projects. Awarding of a small portion of the Irak Petroleum Corp. line is looked for shortly. Activity in standard pipe and oil country goods continues at about the April rate. Tubes and tubing also are quiet. Pipe mill operations continue around 15 to 20 per cent.

Youngstown, O. — Pipemakers have shifted to production of seamless and butt-welded, with little demand in lap-welded. One valley electric-welded pipe mill now is operating on the larger gas sizes.

Birmingham, Ala—Cast iron pressure pipe awards are not heavy. Shops are carrying a little tonnage of standard sizes.

Cast Pipe Placed

2000 tons, various sizes, Hawthorne, N. Y., to United States Pipe & Foundry Co., Burlington, N. J.

500 tons, 6 to 14-inch, Wellesley, Mass., to Warren Foundry & Pipe Co., Wharton, N. J.

240 tons, 6 and 8-inch, Arlington, Mass., centrifugal, sand spun, class 150, to Warren Foundry & Pipe Co.; Wharton, N. J.

180 tons, 10-inch, Bristol, Conn., to Donaldson Iron Works, Emaus, Pa.

125 tons, 36-inch, New York district, to Donaldson Iron Works, Emaus, Pa.

115 tons, gas utility, Brooklyn, to Donaldson Iron Works, Emaus, Pa.

100 tons, sewage disposal plant, boys' school, Warwick, N. Y., to Donaldson Iron Works, Emaus, Pa.

100 tons, approximately, Stamford, Conn., to Donaldson Iron Works, Emaus, Pa.

100 tons or more, various sizes, Saugus, Mass., to Warren Foundry & Pipe Co., Wharton, N. J.

Cast Pipe Pending

170 tons, 6-inch, Revere, Mass., bids in.

150 tons, miscellaneous sizes, water works, Washburn, Wis.

115 tons, 6 and 10-inch pipe, Neenah, Wis.; bids May 9.

115 tons, up to 12-inch, Lititz, Pa.

100 tons, state hospital, Matteawan, N. Y., bids May 10.

100 tons, Rhinecliff, N. Y.

Unstated tonnage, 18-inch natural gas line from Liberty, Mo., to Excelsior Springs, Mo., about 15 miles, Missouri Power & Light Co., Kansas City, Mo.

Steel Pipe Pending

Unstated tonnage, Panama, Laclede Tube Co., St. Louis, low, $4455, delivered.

Strip

Better Inquiry Comes and Sales For Automotive Use Grow Slowly—Most Purchases Small

STRIP PRICES, PAGE 49

Pittsburgh—Strip releases by some automotive interests are slightly heavier, although total demand is little changed from the light volume of preceding weeks. Little change is noted in requirements of consumers other than automotive users. Mill operations continue spotty but are slightly heavier at some points, with the average around 20 per cent. Prices generally continue 1.50c and 1.60c for hot strip and 2.00c for cold-rolled strip.

New York—Little change is noted in demand for strip steel, with prices steady at 2.00c, Pittsburgh, for cold-rolled and 1.40c and 1.50c, Pittsburgh, for hot strip, wide and narrow, respectively.

Philadelphia—Strip demand is quiet and prices are unchanged, hot-rolled being held at 1.50c and 1.60c, Pittsburgh, and cold-rolled at 2.00c, Pittsburgh.

Youngstown, O.—While something like a spurt took place last week in specifications from auto parts-makers it did not continue and mill operations now are routine. Hot-rolled strip leads but narrow cold-rolled also is moving, but in unusually small lots.

Cleveland—More inquiries are appearing for hot and cold-rolled strip, interest being fairly general. Demand from the automotive industry is slightly better. Stove manufacturers' requirements also show improvement. Some orders for stainless steel strip have been placed here recently. Hot-rolled strip holds at 1.40c and 1.50c, Pittsburgh, for wide and narrow, respectively; cold-rolled, is 2.00c, Cleveland.

Chicago — Hot-rolled strip mills are quoting more generally a flat price of 1.60c, Chicago, for narrow sizes, and 1.50c, for wider material. Scattered automotive releases occur, while operations remain at 20 to 25 per cent. Cold-rolled is unchanged at 2.00c, Pittsburgh-Cleveland.

Operations Hold at 24 Per Cent; May Rise This Week

Pittsburgh—Changes in operations of steel plants are slight. Ingot production during the past week was off one point from the 22 per cent trate of the preceding week. One steelworks blast furnace recently banked resumed operations but shutting down of another leaves operations unchanged at 9 active furnaces out of 54. Sheet production continued at 25 with tin plate lower at 45 to 50. Strip output was slightly higher at 20 with pipe unchanged at 15 to 20.

Philadelphia—Eastern ingot operations expanded 1 point in the week ended May 7 to 15 per cent, the first advance in a number of weeks. A further slight increase is expected shortly.

Youngstown, O.—Steel production here in the week ended May 7 averaged 26 per cent, off 2 points, but was expected to be at 28 per cent at the start of this week. Ingot output slumped toward the end of last week due to suspension of an open-hearth plant. Twenty-seven out of 87 open hearths are on.

Operations, week ended May 7	**24**
Operations, week ended April 30	**24**
Operations, week ended April 23	**23**
Operations, this week, 1931	**48**
High for 1932, Feb. 6	**28.5**
Low for 1932—Jan. 2, Apr. 9, 16	**22**

Buffalo—A further reduction in operations in the Buffalo district is in sight this week due to staggered schedules in the Republic works here. The week's operating rate is tentatively placed at 24 per cent, compared with 32 per cent in the greater portion of the week ending May 7. Schedules call for nine open hearths to be on, a decline of three.

Cleveland—Steel ingot production in the week ended May 7 was at 26 per cent, up one point from the week preceding, and is scheduled for 26 per cent this week. American Steel & Wire Co. has in operation five open hearths; Corrigan, McKinney Steel Co., four. Four blast furnaces are in operation; finishing mill operations continue irregular.

Chicago — Ingot production this week will show a small upturn at 20 to 22 per cent, against a shade under 20 per cent last week. Of the 36 steelworks blast furnaces in the district, eight now are active. Inland Steel Co. continues to operate two blast furnaces at Indiana Harbor. Rail mills in the district will continue at existing low operations probably for the remainder of this month.

Birmingham, Ala. — With two open-hearth furnaces of Gulf States Steel Co. operating now, after a close-down of three weeks, steel mill operation based on ingot production last week was 45 per cent. This is liberal estimate. This week will see reduction to below 35.

Warehouse Volume Steady, Making Some Gain

New York—Warehouse steel volume shows spotty improvement with some jobbers while others report activity at about the April rate. Demand is generally well spread. Some jobbers claim business going to importers is of the type that normally would be taken direct by mills, and that mills feel this competition more than warehouses.

Philadelphia—Swedish iron bars from warehouse have been reduced to 5.60c. General jobbing business is quiet.

Pittsburgh—Sales of most products are quiet and in unchanged volume although roofing material is slightly more active. Prices are fairly steady.

Cleveland—The volume of orders to warehouses is slightly better than the average of last month, but they continue small. Prices are steady.

Detroit—Buying of steel from warehouse continues at a better rate than late March and early April but is below the usual seasonal volume.

Cincinnati—Ordering from warehouses has shown no improvement over the rate in March or April. Prices are unchanged.

Chicago—Orders for steel warehouse products are a shade better than in the early part of April. Jobbers are booking material indirectly for automotive work, although bar products still are slow.

St. Louis—Warehouse sales show moderate improvement from early April, plates and sheets are more active, with better call for shapes and stainless steel sheets. Wire and nails are dull.

Big Spurt in Norge Sales

Chicago—Borg-Warner Corp. reports sales of its electric refrigerator subsidiary, the Norge Corp., Detroit, gained 52,000 units in 1931, and showed a dollar increase of $10,000,000, as compared with 1930.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.00
Pittsburgh, dist. fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Valley furnace	15.00
Cleveland fur., local del.	15.50
Philadelphia, delivered	14.76 to 15.01
Virginia furnace	17.50
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.26 to 15.51

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	15.76 to 16.01

MALLEABLE

Valley furnace	15.00
Cleveland fur., local del.	15.50
Pittsburgh dis. fur.	15.50 to 16.00
Pittsburgh, delivered	16.63 to 17.13
Chicago, furnace	16.00
Buffalo fur., local del.	16.50
Eastern Penna., delivered	16.13 to 19.41
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Eastern Penn., del.	15.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.50 to 15.00

BESSEMER

Valley furnace	15.00 to 15.50
Pittsburgh, delivered	16.13 to 17.13
Pittsburgh, furnace	15.50 to 16.00

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.50
Pittsburgh district fur.	15.00 to 15.50
Pittsburgh, delivered	15.63 to 16.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens	7.50
New England, del.	10.00
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$10.50 to 10 75
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50% (nom.)	22 cents
Brazilian, 46-48% (nom.)	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00
Pittsburgh, bessemer	27.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	32.75
Chicago	28.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00 to 27.00
Youngstown	26.00
Cleveland	26.00
Chicago	27.00

SLABS

Pittsburgh	27.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	85.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.	113.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	19.50

Pig Iron

Sales Are Lighter—Eastern Malleable Prices Easier—Protest Made Against Imports

PIG IRON PRICES, PAGE 56

Pittsburgh—Pig iron demand is in unchanged volume, recent activity being at the extremely low rate of April. New business and shipments touched the lowest levels of the year during the past month, and the failure of operations of foundries and steel producers to increase points to continued quietness in the near future. Inquiry is lacking. Prices retain their nominal status with the market usually $15.50 to $16, Pittsburgh, for No. 2 foundry, bessemer and malleable.

Boston—Pig iron is slightly more active. Prices are untested on volume, but are inclined to be easy. Indian iron is selling at $16 to $16.50, dock. Dutch iron moves to nearby points from storage at prices under domestic, and continues to have an unsettling influence on New England prices. A combination rate of $3.28 on rail and barge shipments on Buffalo iron is expected soon which will bring Buffalo iron to around $17.75 here. The local producer's range is $16.50 to $17.75, furnace. Domestic pig iron interests are appealing to Washington against importation of iron, under the antidumping provisions of the tariff law.

New York—Sales are light, with 100 tons of foundry iron for a Connecticut melter among miscellaneous inquiries. Buffalo iron is holding at $14.50, base, furnace. Eastern producers are supporting a movement to check pig iron imports, charging violation of antidumping regulations.

Navy department closes bids May 24, at Washington, on 50 tons of ferrosilicon for delivery at Lakehurst, N. J.

Philadelphia—Pig iron buying is further restricted. Pennsylvania foundry iron is unchanged at $14 to $14.25, base, furnace, subject to concessions on attractive tonnage. Malleable is nominally lower at $16.13 to $19.41, delivered, eastern Pennsylvania.

Youngstown, O. — Infrequent, small sales characterize the valley pig iron market. Output has been restricted to demand as closely as possible. Bessemer and No. 2 foundry are $15, furnace; basic is nominally $14.50 to $15.

Buffalo—An inquiry for 1000 tons of pig iron for New England delivery is pending and probably will establish a second quarter minimum quotation from Buffalo. Producers have little hope of getting the business, however, as foreign iron continues to dominate the seaboard. District prices are firm. Both American Radiator Co.'s plants here will remain idle until June 1, it is understood. Another maker of heating equipment, however, has resumed.

Cleveland—Sales have tapered, following the placing of 1500 tons by a Muncie, Ind., melter. A merchant furnace interest booked 2000 tons in small lots during the week. Shipments are holding up fairly well, oil interests and stove manufacturers taking larger amounts. Automotive foundries, however, still are the trade's best customers, and continue stepping up consumption. The price holds at $15.50, base, Cleveland, for local delivery, and usually $15 for nearby shipments.

Cincinnati—Demand for pig iron has fallen off slightly. Spot buying has resulted in orders for less than 1000 tons for the week.

Chicago—Final figures on April merchant shipments show deliveries were no more than in March. From 300 to 500 tons of low phosphorus iron has been closed north of here. One of the western automobile foundries that has been down two weeks is resuming. Automotive demand remains spotty. Irregular silvery prices are shown in some of the bids for orders. Northern merchant furnace operations remain unchanged. The nominal base quotation is $16, Chicago furnace.

St. Louis—The market is quiet. Implement manufacturers have not experienced the usual seasonal improvement in demand for new equipment, but report many orders for parts, indicating old machines are being reconditioned. Business on stovemakers' books is the smallest for this time in more than a decade.

Birmingham, Ala. — No improvement in demand is noted, and prices are unchanged. Few orders are being placed for more than one or two carloads of iron at a time. Melters are not carrying stocks as furnaces are able to give prompt delivery. Three blast furnaces are producing foundry iron, and two basic.

Toronto, Ont.—The melt continues at 30 to 35 per cent, orders for pig iron being restricted to immediate needs. A few inquiries for larger amounts than usual have appeared, and pig iron production is gaining slightly.

Ferroalloy Requirements Improved Moderately

Ferroalloy Prices, Page 56

New York—Mild improvement is noted in demand for ferroalloys, the automotive industry having contributed to this. Ferromanganese specifications, however, have not picked up appreciably. Prices are steady.

Pittsburgh—Improvement is lacking in specifications for ferroalloys, shipments of some grades being off slightly during the past several weeks. Only occasional orders are appearing in the spot market for ferromanganese and spiegeleisen, with quotations unchanged at $75 and $27, respectively.

Bolt, Nut, Rivet Buying Shows Some Improvement

Bolts, Nuts, Rivets Prices, Page 49

Pittsburgh — Specifications for bolts, nuts and rivets are declining moderately, recent sales comparing unfavorably with activity during April. Orders involve only small lots. Prices are well maintained at 75 off for bolts and nuts and 2.25c, Pittsburgh, for large rivets. Production remains about 20 per cent.

Cleveland—Bolt and nut manufacturers are receiving slightly better orders from automotive manufacturers. Prices are unchanged.

Chicago—Specifications for bolts and nuts have been aided by additional automobile business. Shipping orders are on a par with April. Prices are steady. Small rivets, 7/16-inch and smaller, are 70, 10 and 5 off.

Slow Demand for Lake Superior Iron Ore

Iron Ore Prices, Page 56

Cleveland—Prices on Lake Superior iron ore for this season have not been established, no inquiries having appeared, and producers not endeavoring to press sales. In April, 44,073 tons of ore was shipped from the Lake Superior district, compared with 131,243 tons in this month last year. All the April shipments were from Minnesota, representing stockpile ore, moved to associated companies. A majority of the large shippers have not yet put boats into commission.

Scrap

Downward Movement of Prices Is Unchecked—Storage Facilities Supply Only Buying Factor

Chicago — Unsteadiness in steel scrap results from uncertainties regarding delivery requirements of steelmaking grades to melters' yards and for the immediate future. Discouraged sentiment has arisen because of continued 20 per cent steel works operations. Restricted shipping orders are offset in part by further withdrawals of scrap by railroads. A large part of 3000 tons offered by the Burlington railroad has been withdrawn because of low bids. About 500 to 600 tons, chiefly steelmaking grades, finally was sold. The drop last week of 25 cents in heavy melting steel has been followed by weakness in other grades. Yard interests have been unable to move hydraulic compressed sheets at $5.75.

Boston—Several scrap grades are

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.50 to 7.00
Boston, dealers	3.75 to 4.00
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	5.50 to 6.00
Chicago	6.50 to 6.75
Cleve., No. 1	6.75 to 7.00
Cleve., No. 2	6.50 to 6.75
Det., No. 1 deal.	5.00 to 5.50
Det., No. 2 deal.	3.00 to 3.50
E. Pa. del. mill	6.00 to 7.00
N. Y. deal. R. R.	4.50 to 5.00
N. Y. deal, No. 2	2.00 to 2.50
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	9.75 to 10.25
St. L. No. 1 sel.	6.75 to 7.25
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	10.00

COMPRESSED SHEETS

Buffalo, dealers	5.50 to 6.00
Chi. (Factory)	5.50 to 5.75
Cleveland	6.75 to 7.00
Detroit, dealers	5.00 to 5.50
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	9.25 to 9.75
Valleys	9.25 to 9.75

BUNDLED SHEETS

Buffalo	4.50 to 5.00
Cinci., deal.	5.50 to 6.00
Cleveland	6.00 to 6.50
Eastern, Pa.	5.00
Pittsburgh	8.00 to 8.50
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	3.50 to 4.00
Cincinnati	3.00 to 3.50
Detroit, dealers	2.50 to 3.00
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	11.00 to 11.50
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 10.50
Chicago (3 ft.)	8.00 to 8.50
Chicago (2 ft.)	9.00 to 9.50
Cinci., deal.	10.00 to 10.50
Detroit, deal.	8.00 to 9.00
Pitts. (open-hearth, 3 ft. and less)	11.00 to 11.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.00 to 6.50
Boston, con.	4.50 to 5.00
Buffalo	7.50 to 8.00
Chicago, net	5.25 to 5.75
Cinci., deal. net	3.75 to 4.25
Det., net deal.	2.50 to 3.00
Eastern, Pa.	6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	6.00 to 6.50

COUPLERS, SPRINGS

Buffalo	9.50 to 10.00
Chicago	7.50 to 8.00
Eastern Pa.	7.50 to 8.00
Pittsburgh	10.25 to 10.75
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.50 to 8.00
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	9.00 to 10.00
Eastern Pa.	9.00 to 10.00
Pittsburgh billet bloom crops	13.00 to 13.50
Pitts., sheet bar crops	12.00 to 12.50

FROGS, SWITCHES

Chicago	6.50 to 7.00
St. Louis	7.00 to 7.50

SHOVELING STEEL

Chicago	6.50 to 6.75
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	6.00 to 7.00
Boston, dealers	6.50 to 7.00
Buffalo, No. 1	4.50 to 5.00
Buffalo, No. 2	7.00 to 7.50
Chicago, No. 1	5.25 to 5.90
Chicago, No. 2	6.50 to 6.75
Cinci., No. 2	6.50 to 7.00
Eastern, Pa.	7.50 to 8.00
N. Y., No. 1, deal.	5.00 to 5.50
Pitts., No. 2	9.75 to 10.25
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.00 to 8.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	5.50 to 6.00
Chicago, No. 1	5.00 to 5.50
Cinn., No. 1 dl.	4.50 to 5.00
Cinn., No. 2	3.00 to 3.50
Cleve., No. 2	4.00 to 4.25
Det., No. 1 new deal.	4.00 to 4.50
St. L., No. 1	3.50 to 4.00
Val. new No. 1	9.00 to 9.50

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.05 to 1.55
Buffalo	4.50 to 5.00
Chicago	3.50 to 4.00
Cinn., deal.	3.25 to 3.75
Cleveland	3.50 to 4.00
Detroit	2.25 to 2.75
Eastern, Pa.	3.50 to 4.00
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00
St. Louis	1.50 to 2.00
Valleys	7.25 to 7.75

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	.60 to .75
Buffalo	5.50 to 6.00
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit, deal.	3.25 to 3.75
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	5.50 to 6.50
Boston, dealers	1.00 to 1.25
Buffalo	5.50 to 6.00
Chicago	3.75 to 4.00
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit, deal.	3.25 to 3.75
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.50 to 7.00
St. Louis	4.00 to 4.50

PIPE AND FLUES

Cinn., deal.	4.00 to 4.50

RAILROAD GRATE BARS

Buffalo	4.75 to 5.25
Chicago, net	5.00 to 5.50
Cincinnati	4.25 to 4.75
Eastern Pa.	6.50
N. Y., deal.	4.00 to 4.50
St. Louis	5.25 to 5.75

FORGE FLASHINGS

Boston, dealers	3.00 to 3.50
Buffalo	4.50 to 5.00
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	3.50 to 4.00

FORGE SCRAP

Boston, dealers	2.00 to 2.25
Chicago	9.00 to 9.50
Eastern Pa., del.	5.50 to 6.00

ARCH BARS, TRANSOMS

Chicago, net	6.00 to 6.50
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.50 to 7.00
Chi., steelworks	5.50 to 6.00
Cleveland	6.50 to 6.75
Eastern Pa., del.	6.00 to 6.50
Pittsburgh, O. H.	8.00 to 8.50
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	10.50 to 11.00
Boston, ship. pt.	8.50 to 9.00
Buffalo	10.00 to 10.50
Chicago	10.65 to 11.20
Eastern Pa.	14.50 to 15.00
St. Louis	10.50 to 11.00

SHAFTING

Boston, ship, pt.	8.50 to 9.00
Chicago	6.75 to 7.30
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.00 to 8.50
Boston, iron	10.00 to 11.00
Buffalo, iron	8.00 to 8.50
Buffalo, steel	8.50 to 9.00
Chicago, iron	6.50 to 7.00
Chi., rolled steel	7.00 to 7.50
Cincinnati iron	8.00 to 8.50
E. Pa. steel	7.50 to 8.00
E. Pa. iron	9.50 to 10.00
Pitts. iron	9.50 to 10.00
Pitts., steel	10.25 to 10.75
St. Louis, iron	6.00 to 6.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	7.00 to 8.00
Buffalo (Mach.)	9.50 to 10.00
Buffalo, cupola	8.50 to 9.00
Boston, textile	7.50 to 8.00
Chicago, mach.	7.30 to 7.85
Chi., railroad	6.45 to 7.00
Chicago, agri.	6.15 to 6.75
Cinn., mach. cup.	8.00 to 8.50
Cleve. cupola	7.00 to 7.50
Det., net deal.	7.00 to 7.50
E. Pa. cupola	9.50 to 10.00
N. Y. cup. deal.	6.50 to 7.00
N. Y., del. local foundries	11.00
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston, del.	3.50 to 4.00
Bost., mach. cast	7.50 to 8.00
Buffalo, break	6.00 to 6.50
Cleve., break	3.50 to 4.00
Detroit, auto, net deal.	9.00 to 9.50
Det., break., dl.	4.00 to 4.50
Eastern Pa.	8.00 to 8.50
N. Y. No. 1 dl.	4.00 to 4.50
N. Y. break, dl.	4.50 to 4.75
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	8.00 to 8.50
Buffalo	8.00 to 8.50
Chicago, agri.	6.00 to 6.50
Chicago, R. R.	6.50 to 7.00
Cinci., R. R. del.	8.00 to 8.50
Cinci., agri. del.	7.75 to 8.25
Cleveland, rail	7.50 to 8.00
Det. auto deal.	7.00 to 8.00
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING
5 feet and over

Birmingham	9.00 to 9.50
Boston, deal.	5.50 to 6.00
Buffalo	8.00 to 8.50
Chicago	8.50 to 9.00
Eastern Pa.	9.50
New York	5.25 to 5.75
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	8.00 to 8.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	9.00 to 9.50
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	10.75 to 11.25

STEEL . . . basic . . . fundamental . . . looming large in the vast panorama of human activity . . . forming the mighty sinews of industry . . . lending substance and reality to men's visions . . . challenging to further conquest . . . Steel!

US STEEL

CARNEGIE STEEL COMPANY · PITTSBURGH

Subsidiary of United States Steel Corporation

175

Put it up to . . .
Revere Brass Forgings

Like these leading manufacturers, you can get the characteristics you need most in your parts.

The following tabulation shows the characteristics required by a variety of manufacturers:

A VALVE COMPANY

(1) Lighter, stronger, better looking bonnets

A MANUFACTURER OF REFRIGERATORS

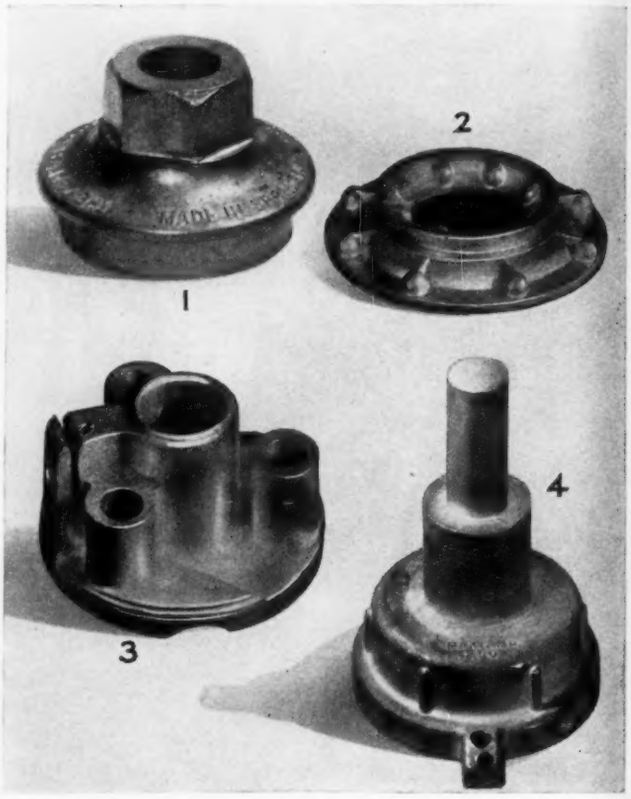
(2) Close texture and grain in parts to make them leak-proof to refrigerant gas

A WASHING MACHINE MAKER

(3) Greater strength, better finish, lower cost

A LEADING ELECTRICAL MANUFACTURER

(4) High conductivity, less weight, oil-tightness.



They all put it up to Revere Brass Forgings. Each found the needed characteristics. In addition, each found the added advantage of lower cost.

Revere Brass Forgings are twice wrought, once in extrusion and again in forging. The result is close-grain texture which makes for gas-tightness and oil-tightness.

Being twice wrought, Revere Brass Forgings have great tensile strength. Consequently less metal need be used, with lighter weight as a natural result.

Revere Brass Forgings are accurately forged. This, plus the close grain and smooth texture, results in faster machining, more ready application of finish. Time is saved, machining tools last longer, rejects are reduced to practically nil.

So finished parts made from Revere Brass Forgings are less costly than those made from sand castings.

Whatever your requirements, it will pay you to find out how you can use Revere Brass Forgings. For further information address Revere Copper and Brass Incorporated, 230 Park Ave., N. Y. C.

Revere Copper *and* Brass
INCORPORATED

Revere COPPER BRASS Products

Baltimore *Division, Baltimore, Md.* Michigan *Division, Detroit, Mich.* Higgins *Division, Detroit, Mich.*
Dallas *Division, Chicago, Ill.* Taunton-New Bedford *Division, Taunton, Mass.* Rome *Division, Rome, N. Y.*

EXECUTIVE OFFICES: NEW YORK CITY
GENERAL OFFICES: ROME, N. Y.

easier, with heavy melting steel off to $5.75, central Massachusetts, and $5.50 reported in some instances, a drop of 25 and 50 cents. Demand is dull for all scrap, little activity being noted in cast.

New York—Heavy melting steel and cast grades are weaker, with new business in scrap light. For No. 1 steel $5.00 a gross ton is being paid for boat shipment while No. 2 has brought offers of $2.00 to $2.50. Steel yard scrap is also down. Heavy breakable, No. 1 and machinery cast are lower, the Florence foundry having bought heavy breakable at $8.00 delivered. Harrisburg is holding up shipments. Approximately 750 tons of scrap iron is offered at the Raritan arsenal, N. J., May 19.

Philadelphia—Following purchases of a few hundred tons of heavy melting steel for delivery at Bethlehem, Pa., at $6 and $6.50, and for Coatesville, Pa., at $7, the market is lower, holding at $6 to $7, delivered. A number of other grades are correspondingly lower.

Buffalo—Further downward revision of nominal scrap prices continues this week, without a confirming sale. Offers to unload tonange below market prices have been ignored by melters, who will not buy at any price. It is reported that fully 10,000 tons of blast furnace scrap has arrived here by canal during the past ten days. Most of this scrap was loaded during the winter. No large tonnages are originating from this source now, it is claimed.

Pittsburgh—Scrap prices are weak and in the continued absence of buying quotations on most grades they are nominal. Dealers have little unfilled business and their purchases are light. Some mill buying is looked for shortly but in the absence of improvement in open-hearth operations purchases are expected to be small. The last purchase of heavy melting steel brought $10.25 while compressed sheets have been quotable at $9.25 to $9.75.

Cleveland—Slow covering of steel and iron scrap for May requirements is reflected in quotations and several reductions have been made in nominal prices, largely untested. Movement of scrap is almost at a standstill, in spite of lowest prices in years.

Detroit—Practically no market for steel and iron scrap exists here and prices are nominal and quoted lower. Buying usually is by dealers with storage facilities as consumers are not interested.

Cincinnati—Dealers' quotations on heavy melting steel remain unchanged despite an occasional distress offering. Little buying is reported, with only limited quantities of material moving on contract. Several railroad lists are current.

St. Louis—Business in iron and steel scrap has dwindled to scant proportions. The past few weeks have witnessed the lowest point in volume of sales and average prices. Demand is at a standstill and little material is being offered. While railroad lists have been of considerable size they include little suited to local uses.

Birmingham, Ala.—The market is exceedingly quiet, with prices unchanged and still weak. Few melters indicate the least interest. Larger consumers of heavy melting steel have supplies for some time to come.

Toronto, Ont.—New business is slow in iron and steel scrap. Mills are out of the market. Fair demand continues for special iron grades with machinery cast most active. Wrought scrap has some call, but other lines are moving slowly. Dealers are picking up only special lines and have made no revision in prices.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Says Banks Depress Scrap

Boston—Hesitancy by New England banks in extending credit and their policy of calling well secured loans "has contributed to the demoralization of the price structure in the scrap iron industry to the lowest point in the history of business," Benjamin H. Schwartz, director general, Institute of Scrap Iron and Steel Inc., New York, charged at a meeting of the Boston chapter, April 28.

Coke

Market Is Slow—Freight Rate Revision Leads to Further Reduction at New Jersey Points

COKE PRICES, PAGE 56

Pittsburgh—Occasional small orders are being received for beehive coke, total volume of which is unchanged. Foundry operations lack improvement while furnace coke is as dull as formerly. The spot market usually is $2.25, with foundry coke continuing $3.25 to $4.50.

New York—A minor freight rate revision last week has led to a 20-cent reduction in the delivered price of by-product coke to certain Newark, N. J., points. As a result, the Newark spread is $8.21 to $8.81. This change follows the 35-cent reduction in the ovens' price in this district two weeks ago. By-product coke prices for New England continue at the new level of $10, and for Philadelphia at $8.50. Beehive furnace coke is $2 to $2.25, Connellsville, and beehive foundry coke, $3 to $3.25, Connellsville, for ordinary brands, and $4 to $4.50, Latrobe, Pa., for premium brands.

Philadelphia—Demand for metallurgical coke is at the lowest ebb in the history of the local trade. The Panama Canal commission has opened bids on 100 tons of foundry coke.

Cincinnati—Specifications for by-product foundry coke remain light. Reduction of $1 a ton, in effect May 1, has had no influence on requirements in this district.

Chicago—April shipments of by-product foundry coke were slightly under those of March. Heavy coke stocks have been accumulated. The oven price is unchanged at $7.50. Quotations for delivery in the Chicago switching district are $8.25, plus freight surcharge.

St. Louis—With the rate of foundry operations showing no betterment, specifications for metallurgical coke have declined slightly. Deliveries in April, according to local interests, fell below the March total, and were at the lowest daily rate this year.

Birmingham, Ala. — Coke prices are weak, demand is slow and production is held down. Some shipments are being made to outside districts.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

Sheets	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	6.50
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.75
Seamless copper	14.87½
Rods	
Yellow brass (high, full turnings)	10.25
Naval brass	11.37½
Anodes	
Copper untrimmed	12.25
Wire	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	3.00 to 3.25
Chicago	2.00 to 2.25
Cleveland	3.00 to 3.25
St. Louis	2.75
Heavy Yellow Brass	
New York	2.00 to 2.25
Heavy Copper and Wire	
New York	4.00 to 4.25
Boston	4.50 to 4.75
Chicago	2.75 to 3.00
Cleveland	2.75 to 3.25
St. Louis	3.00
Composition Brass Borings	
New York	2.75 to 3.00
Yellow Brass Tubing	
Cleveland	1.75 to 2.25
Light Copper	
New York	3.25
Chicago	2.37½ to 2.62½
Cleveland	2.50 to 3.00
St. Louis	2.75
Light Brass	
Boston	1.65 to 1.85
Chicago	1.25 to 1.50
Cleveland	1.25 to 1.50
St. Louis	1.50
Lead	
St. Louis	2.00
Zinc	
New York	1.00
Cleveland	0.87½ to 1.00
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	10.50 to 11.00
Clippings, hard, Cleveland	7.00 to 8.00
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	3.75 to 4.25
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.00 to 3.50

Secondary Metals

Remelt, aluminum No. 12	8.00 to 9.00
Brass ingots, 85-5-5-5	6.12½

Metals

Zinc Drops to New Low Level But Tin Prices Rise—Copper Unchanged—Lead Steady

New York—Demand for all metals was quiet last week with the exception of moderate business in lead. Zinc prices fell to new lows but tin was stronger. Copper showed little change. Antimony developed further weakness. Lead and aluminum prices were steady.

Copper—Chief development in the copper situation was the inclusion of a 4-cent import duty on the metal in the tax bill by the Senate finance committee. This was a reversal of the committee's earlier action. Much uncertainty as to whether the tariff proposal becomes law still exists. Copper could be had from some custom smelters at 5.62½c, Connecticut, but 5.75c generally was asked. Mine producers remained out of the market at the nominal asking price of 6.00c. Domestic demand was dull, with consumers reported well covered on requirements. Export sales were light.

Lead—Sales were moderate, with much business restricted to the Midwest. Demand was well diversified, except cable makers, who are doing little. Consumers have been showing more confidence, with the price situation steady over a month.

Zinc—Prime western zinc was available at a new record low price of 2.50c, East St. Louis. Sales continued light despite the attractive price. Stocks of slab zinc increased 2574 tons in April, the largest gain in over a year. The Tri-State ore situation continued unsatisfactory with prices also at record lows.

Tin—Prices jumped more than three cents a pound on the announcement that leading producers would shut down during June and July and resume at a slow pace after that. As of June 1 the annual production quota will be further reduced 20,000 tons. This is expected to bring production well below consumption.

Antimony—Further easiness developed in antimony last week with the price sagging to 5.25c, duty paid, on spot and nearby. Demand continued slow.

Aluminum—Business continued in small volume but prices remained steady.

Coke By-Products Firm; Imports Affect Sulphate

New York—Distillate prices are firm, although demand continues seasonally light and output curtailed. Toluol buying has improved slightly due to activity in the lacquer trade, which in turn reflects gain in automobile production. Naphthalene shipments are improving. Recent imports of naphthalene have been heavier, several thousand bags coming into New York during the week. Sulphate of ammonia prices are irregular.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to 1.20

Quicksilver Easier

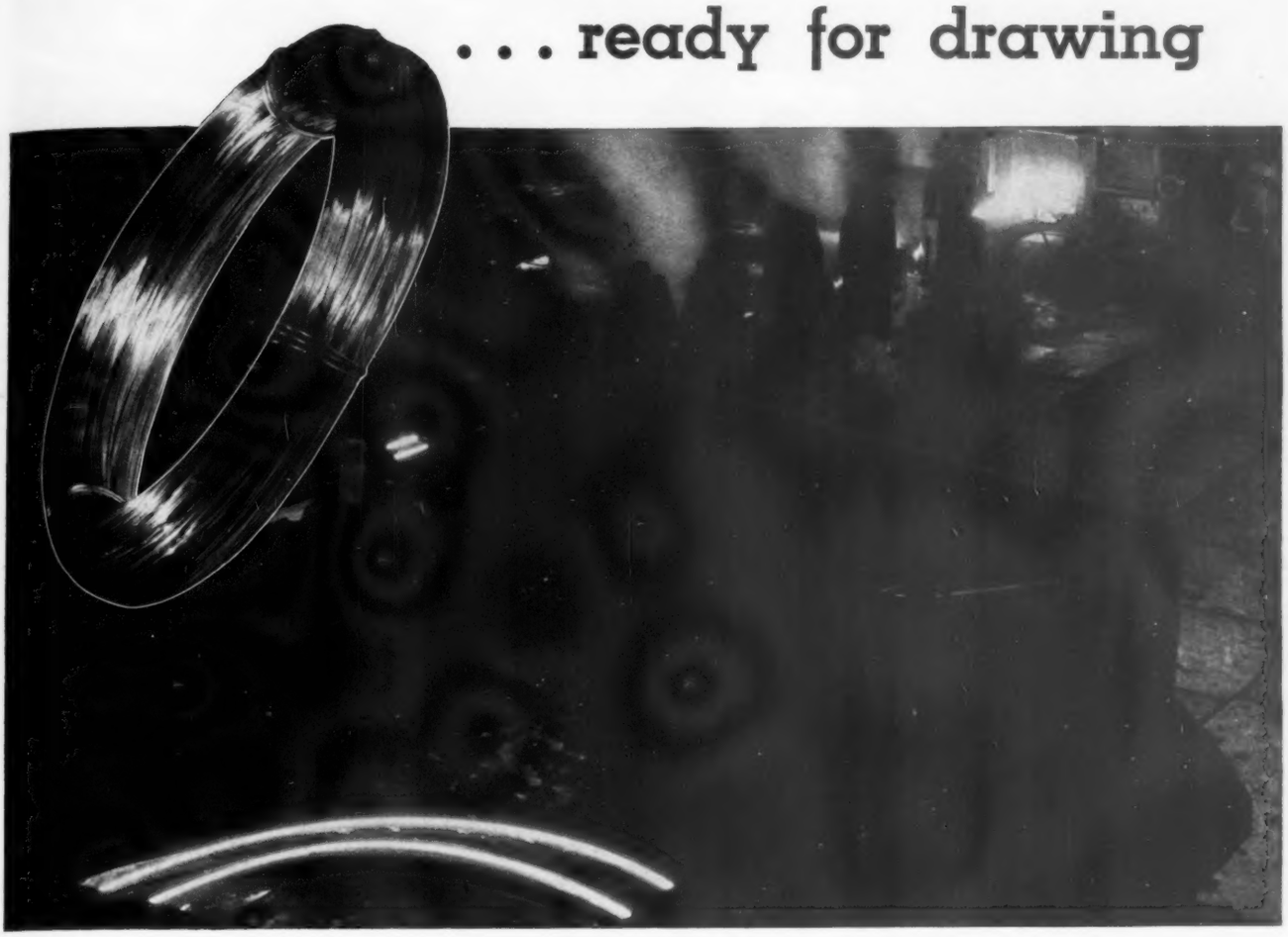
New York—Quicksilver prices are lower, and largely nominal because of lack of buying interest. Small lots are now $68.50 to $70, a virgin flask of 76 pounds, while round lots could be purchased at less. Producers on the Pacific coast are holding to $75 a flask.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
April 30	5.75	6.12½	5.50	19.00	19.30	3.00	2.90	2.57½	22.90	5.35	35.00
May 2	5.75	6.12½	5.50	20.00	20.45	3.00	2.90	2.57½	22.90	5.25	35.00
May 3	5.70	6.12½	5.50	20.45	20.85	3.00	2.90	2.55	22.90	5.25	35.00
May 4	5.75	6.12½	5.50	22.00	22.40	3.00	2.90	2.50	22.90	5.25	35.00
May 5	5.75	6.12½	5.50	22.12½	22.55	3.00	2.90	2.50	22.90	5.25	35.00
May 6	5.70	6.12½	5.50	22.00	22.40	3.00	2.90	2.50	22.90	5.25	35.00

BILLETS ARE ROLLED INTO RODS

. . . ready for drawing



Care and skill in drawing wire are important but no more important to the ultimate product than the operations and processes employed in manufacturing the rods ready for drawing. Therefore to produce Wissco Wire . . . a wire of the highest quality and uniformity . . . the Wickwire Spencer Steel Company performs in its own mills every step in wire making. Smelting, rolling, drawing and heat treating each in its turn is done in the best known manner to produce a product worthy of the name WISSCO.

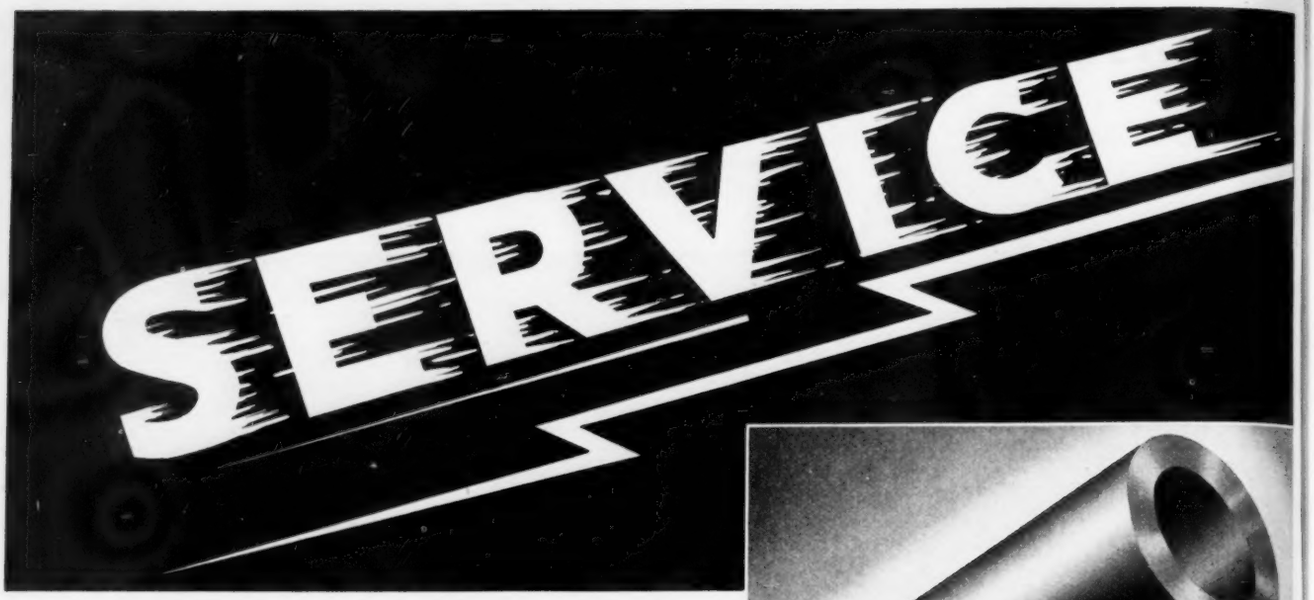
Wickwire Spencer Steel Co., 41 East 42nd Street, New York City

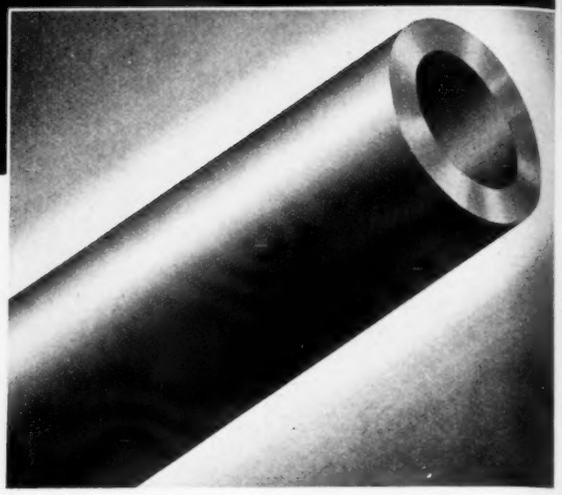
Buffalo, Chicago, Detroit, Philadelphia, Tulsa, Worcester; *Pacific Coast Headquarters:* San Francisco; *Branches and Warehouses:* Los Angeles, Portland, Seattle. *Export Sales Department: New York City*

WISSCO WIRE

Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes — for your specific purpose. Hard-Drawn, soft, or annealed Basic or Bessemer Wires — Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wires — Valve Spring — Music — Clip — Pin—Hairpin—Hook and Eye — Broom — Stapling — Bookbinding — Machinery Spring Wire — Reed Wire — Clock — Pinion—Needle-Bar — Screw Stock — Armature Binding — Brush — Card — Florist — Mattress — Shaped — Rope — Welding. Flat Wire and Strip Steel, High or Low Carbon — Hard, annealed or tempered — Clock Spring Steel — Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

Wissco Wire *by Wickwire Spencer*





for National-Shelby
MECHANICAL TUBING

From any of these distributors listed below, located in strategic points throughout the country—quick and courteous service rendered. Large stocks assure prompt response to your requirements.

"There is a NATIONAL-SHELBY distributor in your vicinity"

NEW YORK, N. Y.
PETER A. FRASSE & CO., INC.
17 Grand Street at 6th Ave.
Phone: Walker 5-2200

JERSEY CITY, N. J.
PETER A. FRASSE & CO., INC.
Twelfth and Provost Streets
Phone: Montgomery 5-2202

BUFFALO, N. Y.
PETER A. FRASSE & CO., INC.
50 Exchange Street
Phone: Washington 2000

BOSTON, MASS.
AUSTIN-HASTINGS CO., INC.
226 Binney St., Cambridge, Mass.
Phone: Porter 4480

HARTFORD, CONN.
PETER A. FRASSE & CO., INC.
135 Walnut Street
Phone 2-1231

PHILADELPHIA, PA.
PETER A. FRASSE & CO., INC.
3717 Wissahickon Avenue
Phone: Radcliffe 7100; Park 5341

PITTSBURGH, PA.
WILLIAMS & COMPANY, INC.
901-937 Pennsylvania Avenue
Phone: Cedar 2980

CLEVELAND, OHIO
THE STRONG, CARLISLE & HAMMOND COMPANY
1394 West Third Street
Phone: Main 6760

CINCINNATI, OHIO
E. K. MORRIS & COMPANY
311-317 W. Second Street
Phone: Main 1525

DETROIT, MICH.
C. A. ROBERTS CO.
2460 Bellevue Avenue
Phone: Melrose 2020-2021

INDIANAPOLIS, IND.
C. A. ROBERTS CO.
207 W. Morris Street
Phone: Drexel 6000

NEW ORLEANS, LA.
STANDARD SUPPLY & HARDWARE CO.
822-838 Tchoupitoulas Street
Phone: Raymond 2251

CHICAGO, ILLINOIS
C. A. ROBERTS CO.
20 Aberdeen Street
Phone: Haymarket 6330

ST. LOUIS, MO.
C. A. ROBERTS CO.
20-24 N. Second Street
Phone: Chestnut 7830-7831

DENVER, COL.
HENDRIE & BOLTHOFF MANUFACTURING & SUPPLY CO.
1635 Seventeenth Street
Phone: Keystone 4111

SAN FRANCISCO, CAL.
DUCOMMUN CORPORATION
656 to 666 Townsend Street
Phone: Hemlock 2900

LOS ANGELES, CAL.
DUCOMMUN CORPORATION
219 to 227 Central Avenue
Phone: Trinity 0621

MONTREAL, CANADA
LYMAN TUBE & SUPPLY CO., LTD.

TORONTO, CANADA
LYMAN TUBE & SUPPLY CO., LTD.

WINNIPEG, CANADA
LYMAN TUBE & SUPPLY CO., LTD.

VANCOUVER, CANADA
LYMAN TUBE & SUPPLY CO., LTD.

NATIONAL-SHELBY SEAMLESS TUBING

Pacific Coast

San Francisco Bay Bridge Will Require 150,000 Tons of Steel Aside from Cables—Little Gain In Buying but Prospects Are Good for Future Steel Needs—Prices Show Little Change

San Francisco—(*By Air Mail*)—Although demand, generally, has shown little improvement a number of fair sized structural shape and reinforcing bar tonages were booked. The largest called for 2600 tons of shapes for bridges for the Long Beach cut-off of the Union Pacific Co., of which the Consolidated Steel Corp. took 1400 tons and the Columbia Steel Co., for the American Bridge Co., 1200 tons. Prices are holding fairly firmly to established levels.

Awards of concrete bars aggregated 1800 tons, the fourth largest weekly total of the year. Truscon Steel Co. took 205 tons for highway work in Solona county, Calif., and the Soule Steel Co. secured 138 tons for a bridge over Rocky Creek, Monterey county, Calif. Bids have been opened on 400 tons for two bridges for Los Angeles county, on 327 tons for highway work in Orange county and on 250 tons for industrial buildings for the Sunnyvale dirigible base.

Preliminary estimates of the structural shape requirements for the San Francisco-Oakland bridge, over San Francisco Bay, show that at least 150,000 tons will be required. This tonnage does not include the cables for the suspension portion of the bridge.

Structural shape awards totaled 2982 tons, the third largest weekly total of the year. McClintic-Marshall Co. booked 250 tons for a grandstand for the Los Angeles county fairgrounds at Pomona, Calif. Bids have been opened on 600 tons for the Kress store, Hollywood, Calif., and on 327 tons for two bridges for Los Angeles county. Bids will be opened May 9 for 700 tons for the H Street bridge, Sacramento, Calif.

Northwest Buying Is Slow

Seattle—General construction in the Pacific Northwest is exceptionally inactive, almost entirely federal and state projects. About $4,000,000 is involved in public works contracts up for prompt action. Washington awarded $200,000 in highway jobs this week, Oregon received 114 bids on 14 roads projects involving $500,000 and on Montana will open tenders May 10 for seven projects, requiring some reinforcing bars.

The only important steel contract of the week, 650 tons of reinforcing bars for the Roseburg, Oreg., veterans' home buildings, was awarded to the Pacific Coast Steel Corp., Seattle. Pacific States Construction Co., Seattle, was awarded a 572-foot steel span over the Skykomish river, Washington, at $91,511, about 500 tons of structurals. Sub-award for shapes at Roseburg, Oreg., is pending.

Seattle has purchased a carload of ¾ and 1-inch galvanized wrought iron pipe from Pacific Waterworks Supply Co., Seattle.

Cast iron pipe specifications are confined to small tonnages, in some instances municipal buyers insisting that suppliers take bonds. Tacoma, Wash., is in the market for 70 tons of 10-inch; Centralia, Wash., has appropriated $25,000 for replacements; Miles City, Mont., will open bids May 9 for a small quantity of 4 and 6-inch pipe and fittings.

Steel in Europe

British Steel Market Feels Foreign Steel Burden

London—(*By Radio*)—Activities in the steel market in Great Britain continue restricted, heavy stocks of foreign steel loading the market and offsetting advantages of the higher tariff. Prices are being shaded on northeast coast steel and Middlesbrough pig iron. The tin plate pool has abandoned its fixed price, owing to fluctuations in the value of the pound sterling.

Brussels and Paris report their export trade at a standstill but the French domestic market is fair and prices are firm. The export trade of Germany shows some gain, an item being sale of 3000 tons of ship plates to Holland.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, May 5

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	£ s d
Foundry, 2.50-3.00 Silicon	$10.55	2 17 6	$ 9.72 to $10.21	2 0 0 to 2 2 0
Basic bessemer	10.28	2 16 0*	9.23	1 18 0
Hematite, Phos. .03-.05	11.74	3 4 0	.....	.....
SEMIFINISHED STEEL				
Billets	$19.68	5 7 6	$18.33	2 2 6
Wire rods, No. 5 gage	31.20	8 10 0	21.87	4 10 0
FINISHED STEEL				
Standard rails	$30.28	8 5 0	$28.55	5 17 6
Merchant bars	1.15c	7 0 0	.48c to .50c	2 4 0 to 2 5 0
Structural shapes	1.27c	7 15 0	.47c to .48c	2 3 0 to 2 4 0
Plates, †¼ in. or 5 mm	1.44c	8 15 0	.59c to .61c	2 14 0 to 2 15 0
Sheets, black, 24 gage or 0.5 mm.	1.44c	8 15 0	1.20c to 1.21c	5 9 0 to 5 10 0
Sheets, gal., 24 gage, corr.	1.52c	9 5 0	1.51c	6 17 6
Bands and strips	1.56c	9 10 0	.72c to .74c	3 5 0 to 3 7 6
Plain wire, base	1.39c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.80c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.80c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.75	0 15 0	$3.20	0 13 2

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.55	2 17 6	$ 9.48	240(2)	$ 9.13	325	$16.44	69
Basic bessemer pig iron	10.28	2 16 0*	7.90	200(1)	8.29	295	17.98	75.50
Furnace coke	2.43	0 13 3	4.90	124	4.50	160	5.10	21.40
Billets	19.68	5 7 6	14.62	370	10.82	385	23.70	99.50
Standard rails	1.44c	8 15 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.15c	7 0 0	.90c	500	.56c	430	1.24c	115
Structural shapes	1.44c	8 15 0	.99c	550	.56c	430	1.22c	112.50
Plates, †¼-in. or 5 mm	1.48c	9 0 0	1.17c	650	.71c	545	1.43c	132.50
Sheets, black	1.44c	8 15 0§	1.35c	750‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	1.56c	9 10 0	2.70c	1,500	1.95c	1,500	4.00c	870
Plain wire	1.39c	8 10 0	1.75c	970	1.95c	1,500	1.92c	178
Bands and strips	1.56c	9 10 0	.90c	500	.88c	675	1.44c	133

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

Machinery

GENERAL conditions in machinery and equipment markets show no improvement, despite scattered reports of occasional new inquiry and some small sales. The Russian inquiry noted last week has resulted in the placing of 15 grinders with New England builders; and other interests are reported figuring on machines, despite unfavorable credit terms. Two auction sales are scheduled this week in the Chicago district, and probably will exert a further depressing effect upon the market in general because of the low prices which usually develop at these sales. Buying of track welders by western railroads has not yet materialized.

New York—Inquiry for plant equipment and machinery has sagged to a low point, May witnessing no increase in activity, the outlook being even duller in most directions. Some builders experienced a slight flurry last month due to light purchasing on the part of automobile parts makers, but this source is now inactive. Amtorg Trading Corp. has placed some business in this country for Russian tractor plant equipment, seeking long credit terms similar to those extended in Germany. Business placed in some quarters has been heavy and an even larger list will be placed here if the Russian buyers' terms are met. Outside this activity sales are limited largely to individual units. Considerable business on which bids are in is yet to be placed by the government.

Worcester, Mass.—General conditions in the equipment market here show little variation. Amtorg Trading Corp. has placed 15 machines in Worcester for Russia; seven grinders, three of them 24 inch, for tractor manufacture, with the Norton Co.; and eight internal grinders with the Heald Machine Co.

Domestic inquiry is stagnant. An automotive maker in the middle west is inquiring for machines and the government is asking bids on special routing machines for the arsenal at Dover, N. Y.

Pittsburgh—Gradual improvement is noted in inquiry for machine tools and some other equipment. Orders are in their former reduced volume, however, business holding about on a par with the rate of preceding weeks. Heavy mill equipment builders report a moderate gain in inquiry recently but interest is limited principally to small lots with but little activity noted in larger mills. Repair work is confined principally to necessary maintenance. Demand for rolls is in keeping with the low operating rates of finishing mills.

Cleveland—Inquiries for new machinery and equipment are showing a little more life, but actual orders continue slow and scattered. A manufacturer of welding equipment reports his business unchanged from the levels of the past few weeks. Outlook in this field, however, is reported as encouraging. A builder of turret lathes reports April business slightly up from the March total but still at low ebb. This interest is of the opinion that the immediate future is anybody's guess and that favorable developments rest largely on hope.

Cleveland Crane & Engineering Co. has been awarded contract for a 10-ton electric traveling crane for the Brooklyn navy yard, bureau of yards and docks, at $5495.

Chicago—Few signs of life are noted in the Chicago district plant equipment and machine tool markets. Occasionally scattered inquiries come out, and some orders for used machine tools have been closed. Contrary to expectations, no recent purchases of track welding equipment have been made by western railroads. A few projects are active in the Milwaukee district, including several inquiries for lathes in or near the Milwaukee industrial area. The lack of activity from road building machinery companies is due in a large measure to crippled finances of county and state highway commissions.

Plant assets, real estate and about 100 shop, production and small tools, besides cranes, raw and semi-finished materials and foundry equipment of the Waterloo, Iowa, and Chicago Heights, Ill., plants of Construction Engineering Co., road building equipment, representing an inventory value of about $600,000, will be sold at auction May 10 at the Waterloo plant, and May 12 at the Chicago Heights plant, sales being subject to approval of the creditors' committee. A small amount of machinery and equipment also will be sold May 10 and 11 at receivership sale of the Globe Iron & Metal Co. at Joliet, Morris and Streator, Ill. Low prices for resale equipment at auctions recently have had a depressing effect on the equipment markets in general.

Michigan Tool Engineers Form Technical Society

To advance the arts and sciences of tool engineering is the purpose of the American Society of Tool Engineers organized recently in Detroit with headquarters at 8316 Woodward avenue. Membership is composed of engineers and technicians connected with the various branches of the tool industry in Greater Detroit, Pontiac, Flint, Lansing, Saginaw and Bay City.

Officers for the year ending April 1933 have been elected as follows: President, J. A. Siegel, assistant chief tool designer, Packard Motor Car Co., Detroit; first vice president, W. H. Smila, tool engineer, Chrysler Corp., Detroit; second vice president, E. J. Ruggles, chief tool designer, Gemmer Mfg. Co., Detroit; secretary, A. M. Sargent, president and general manager, Pioneer Engineering & Mfg. Co., Detroit; and treasurer, W. J. Fors, tool engineer, 1340 East Grand boulevard, Detroit.

Regular meetings will be held on th second Thursday of each month, the next meeting being scheduled for May 12 at Hotel Webster Hall. H. A. Woofter, chief engineer, Swift Electric Welder Co., Detroit, will address the society on the subject of "Production Welding—Spot, Butt and Projection."

Plan Management Meeting

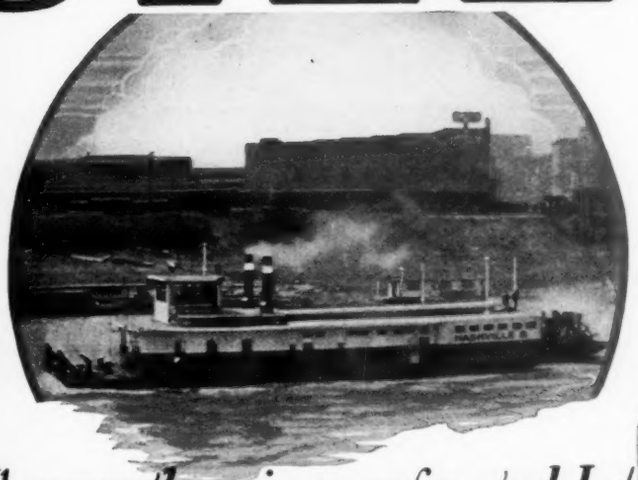
A conference to consider management problems of the nation's smaller industries will be held at Silver Bay, N. Y., on Lake George, July 11-16. An outgrowth of a similar conference last year, the theme of the 1932 conference will be "New Levels of Management Effectiveness—the Job Ahead." James W. Towsen, 51 East Forty-second street, New York, is chairman of the organization committee.

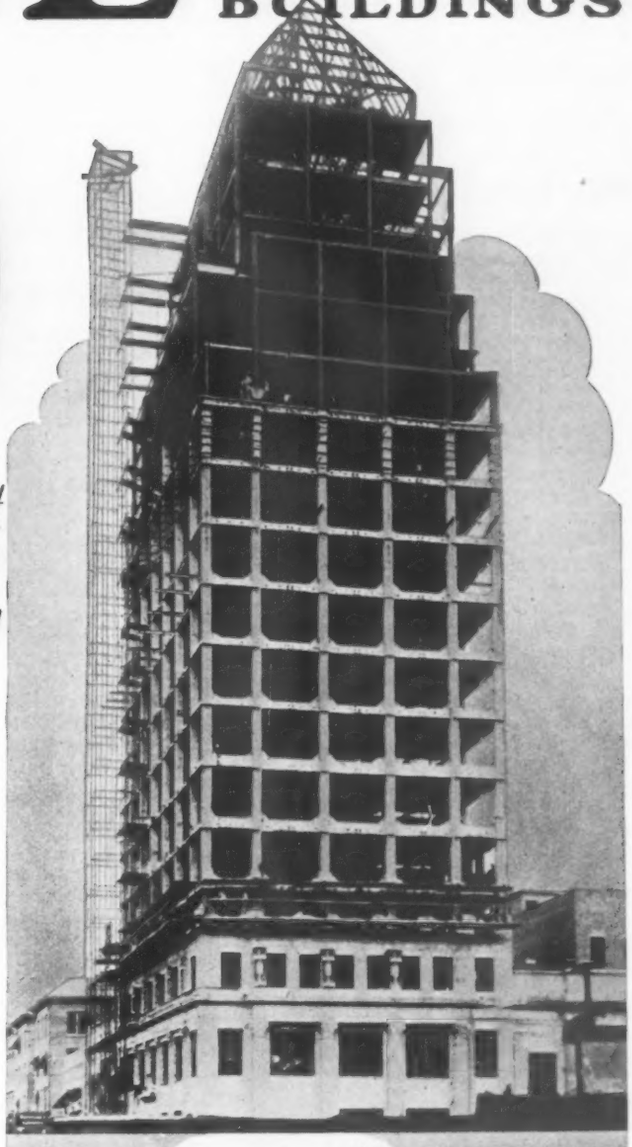
Arsenal Low on Shells

Frankford, Pa., arsenal has underbid steel companies on 10,000 three-inch illuminating projectiles for the navy, with a figure of $2.43 each. Bethlehem Steel Co. bid $3.34, Crucible Steel Co. of America $3.99. Each projectile weighs 7.81 pounds.

Lakeside Foundries Co., 1555 South Barclay street, Milwaukee, has changed its name to General Foundries Co.

STEEL FOR BOATS BRIDGES OR BUILDINGS





Wherever there is a use for steel-Let

TENNESSEE

figure on your requirements. Quality products backed by careful inspection—prompt shipments, with intelligent cooperation through understanding of the customer's needs—these are some of the reasons which make Tennessee a desirable source of supply.

Products: **Structural Shapes, Plates, Bars and Small Shapes, Sheets (Blue Annealed, Black and Galvanized), Rails and Accessories, Forgings Castings, Semi-Finished Products, Pig Iron.**

US STEEL

Tennessee Coal, Iron & Railroad Co.

General Offices: Brown-Marx Bldg., BIRMINGHAM, ALA.

Subsidiary of United States Steel Corporation *

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BOSTON—Korite Inc., manufactuer of industrial chemicals and treatment for feed water systems, refrigerator and air cooling systems and boilers, has moved from 89 Bickford street, Jamaica Plain, to 10 Thatcher street, Boston, to obtain larger manufacturing facilities. Francis J. Horgan is president and treasurer.

CHELSEA, MASS.—Vulcan Smelting Works has begun operations at 105 Fifth street, in the scrap metal yard of H. Cohen & Co. White metals will be smelted. Harry Cohen is president.

FRAMINGHAM, MASS. — Beede Electrical Instrument Corp., Irving square, has begun production of electric meters and testing devices. P. W. Mack is president and treasurer.

LYNN, MASS.—North Shore Ice Co., 35 Boston street, is building an ice manufacturing plant at 33 Allerton street, of 150 tons daily capacity. H. C. Batchelder is president and treasurer.

New York

COLD SPRING—Cold Spring Mfg. Corp. has been incorporated with $10,000 capital to manufacture machinery, by J. B. Southard, Cold Spring.

GLENS FALLS—Allen Paper Machinery & Engineering Works has been incorporated with $10,000 capital and 101 shares no par value, by H. D. Wells, Glen Falls.

NEW YORK—Park Metal Products has been incorporated with 100 shares common stock, by C. E. Frankel, 18 West Forty-fourth street.

NEW YORK—Byproducts Recoveries has been incorporated with $10,000 preferred stock and 200 shares common stock to manufacture dust removers, by Roe & Kramer, 68 William street.

NEW YORK — Sherman Metal Works has been incorporated with 100 shares no par value to manufacture metal products, by J. H. Levy, 60 East Forty-second street.

NEW YORK—Standard Steel & Staple Works has been incorporated with $20,000 capital to manufacture steel products, by A. Gotterer, 1123 Broadway.

New Jersey

KEARNY—Duo Exhibit Co. has been incorporated with $125,000 capital to manufacture vending machines, by H. Heller, Kearny.

Illinois

CHICAGO—Illinois Gear & Machine Co., 1025 South Menard street, has been incorporated with $15,000 capital to manufacture engineering equipment, by Vincent P. Reilley and associates.

Southern States

WASHINGTON—Bids will be received by the bureau of supplies and accounts, navy department, until May 17 on Schedule 7970 for one motor-driven sliding head drill machine for Mare Island, Calif.; until May 24 on Schelule 7964 on 5800 square feet of metal sash, industrial type, for delivery at New York and San Francisco.

GREENWOOD, MISS.—Kansas City Bridge Co., Kansas City, Mo., has taken a contract for a steel bridge near Valley Hill, Miss., costing $40,000.

MEMPHIS, TENN.—Board of water commissioners, 107 North Second street, is taking bids until May 20 for construction and equipment of a pumping station for the city waterworks system.

Texas

DALLAS — Accurate Machine Works, F. B. Rick owner, has established a shop at 2516 Main street, to specialize in precision work.

GALVESTON—Hercules Equipment Co. has been incorporated with $5500 capital to design and manufacture metal products, by Charles Fowler Jr., 730 American National Insurance building.

HOUSTON—Diamond Metal Co. has been incorporated with $25,000 capital to manufacture metallic diamonds for oil well equipment, by J. R. Cookenboo, 320 West building.

Wisconsin

FOND DU LAC—Morris Foundry Inc., 20 East Sibley street, suffered severe damage by fire. Rebuilding and replacement of equipment is being undertaken at once.

Pacific Coast

CASHMERE, WASH.—Marvin Chase, hydraulic engineer, is promoting a 30-mile pipe line for water from Snow Lake to Cashmere; 22 to 24-inch pipe will be used, at a cost of about $664,800.

Dominion of Canada

VANCOUVER, B. C.—Pressure Pipe Co. of Canada Ltd., 1404 Standard Bank building, Vancouver, with main office at 760 Victoria square, Montreal, Que., has been incorporated with $131,700 capital and is building a plant here for the manufacture of pipe.

BRADFORD, ONT. — Bradford Lighting Fixtures Ltd. has been incorporated with $30,000 capital and 1000 shares no par value to manufacture lighting devices, by Nathan Sandler, Toronto.

EAST WINDSOR, ONT.—Long Mfg. Co. Ltd., has been incorporated with 4000 shares no par value to manufacture radiators and automotive parts, by John B. Aylesworth, Windsor, Ont.

PORT HOPE, ONT.—Nicholson File Co., Cavan street, will build and equip an addition to its plant to cost $15,000.

PRESCOTT, ONT.—Newell Mfg. Co., King street, has started erection of a plant addition and is making considerable alterations.

SARNIA, ONT.—City council has approved plans for adding three electric pumps at Point Edward waterworks plant, with capacity of 1,000,000 gallons per day. T. P. Bradley, city hall, is chairman of waterworks committee.

WALLACEBURG, ONT.—Schultz Die Casting Co. of Canada Ltd. has been incorporated with $97,500 capital and 2500 shares no par value, by Arthur St. Clair Gordon, Wallaceburg.

New Trade Publications

RECORDERS—Bailey Meter Co., 1050 Ivanhoe road, Cleveland, has issued Bulletin No. 112, describing its boiler water level recorder. It outlines the mechanical construction, and methods of installation, how to obtain records of true water level throughout the full range of the drum. Illustrations include installation views and reproductions of actual chart records.

STEEL SHEET PILING—Carnegie Steel Co., Pittsburgh, has issued a bulletin on the condition of steel sheet piling after 19 years exposure around piers of Tenth street bridge, Pittsburgh. It is an interesting presentation of the conditions resulting from such long use and the results of its exposure.

WIRE ROPE—Why it prefers and recommends preformed wire rope is set forth in a leaflet by the Broderick & Bascom Rope Co., St. Louis. The explanation is in nontechnical language and tells simply the advantages claimed for this type of wire rope.

ENGINEERING ACHIEVEMENTS—No. 6 of the series by the Wellman Engineering Co., Cleveland, calls attention to its type of gas producer and to its movable car dumper, both designed to eliminate labor and give better performance.

ACCUMULATORS — John Robertson Co., 123 Water street, Brooklyn, has issued a bulletin on its hydropneumatic accumulators, illustrated with diagrams and halftones. A table of specifications and capacities is included.